Ravi Maths Tuition

Straight Lines

11th Standard

Mathematics

2 Marks 321 x 2 = 642

1) Without using distance formula, show that points (– 2, – 1), (4, 0), (3, 3) and (–3, 2) are the vertices of a parallelogram.

2) Intersecting the x-axis at a distance of 3 units to the left of origin with slope –2.

3) If the angle between two lines is $\frac{\pi}{4}$ and slope of one of the lines is $\frac{1}{2}$, then find the slope of the other line.

4) Two lines passing through the point (2, 3) intersects each other at an angle of 60o . If slope of one line is 2, find equation of the other line.

5) The slope of a line is double of the slope of another line. If tangent of the angle between them is $\frac{1}{3}$,then find the slope of the lines.

6) Without using the Pythagoras theorem, show that the points (4, 4), (3, 5) and (–1, –1) are the vertices of a right angled triangle.

7) The length L (in centimetre) of a copper rod is a linear function of its Celsius temperature C. In an experiment, if L = 124.942 when C = 20 and L= 125.134 when C = 110, express L in terms of C.

8) Find the slope of a line, which passes through the origin and mid-point of the line segment joining the points P(0,-4), and Q(8,0).

9) Find equation of the line perpendicular to the line x – 7y + 5 = 0 and having x intercept 3.

10) Prove that the line through the point (x_1,y_1) and parallel to the line Ax + By + C = 0 is $A(x-x_1) + B(y-y_1) = 0$.

11) By using the concept of equation of a line, prove that the three points (3, 0), (– 2, – 2) and (8, 2) are collinear.

12) The line through the points (h,3) and (4,1) intersects the line 7x - 9y - 19 = 0 at right angle. Find the value of h.

13) If p is the length of perpendicular from the origin to the line whose intercepts on the axes are a and b, then show that $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$.

14) Find the value of p so that the three lines 3x + y – 2 = 0, px + 2 y – 3 = 0 and 2x – y – 3 = 0 may intersect at one point.

15) In what ratio, the line joining (–1, 1) and (5, 7) is divided by the line x + y = 4?

16) Find the coordinates of the foot of perpendicular from the point (–1, 3) to the line 3x – 4y – 16 = 0.

17) Find the angle between the x-axis and the line joining the points (3,–1) and (4,–2).

18) A ray of light passing through the point (1, 2) reflects on the x-axis at point A and the reflected ray passes through the point (5, 3). Find the coordinates of A.

19) Find the distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ when: (i) PQ is parallel to the y-axis (ii) PQ is parallel to the x-axis.

20) Find a point on the x-axis, which is equidistant from the points (7, 6) and (3, 4).

21) Find the slope of the line, which makes an angle of 30° with the positive direction of y-axis measured anticlockwise.

22) A line passes through $(x_1, y_1)$and (h, k). If slope of the line is m, show that $k - y_1 = m(h - x_1)$

23) Write the equations for the x and y-axis.

24) Passing through the point (- 4, 3) with slope $\frac{1}{2}$

25) Passing through (0, 0) with slope m.

26) Intersecting the y-axis at a distance of 2 units above the origin and making an angle of 30° with positive direction of the x-axis.

27) Passing through the points (-1, 1) and (2, -4).

28) Perpendicular distance from the origin is 5 units and the angle made by the perpendicular with the positive x-axis is 30°.

29) Passing through $(2, 2\sqrt{3})$ and inclined with the x-axis at an angle of 75°.

30) The vertices of Δ PQR are P (2, 1), Q (–2, 3) and R (4, 5). Find equation of the median through the vertex R.

31) Find the equation of the line passing through (–3, 5) and perpendicular to the line through the points (2, 5) and (–3, 6).

32) A line perpendicular to the line segment joining the points (1, 0) and (2, 3) divides it in the ratio 1: n. Find the equation of the line.

33) Find the equation of a line that cuts off equal intercepts on the coordinate axes and passes through the point (2, 3).

34) Find equation of the line through the point (0, 2) making an angle $\frac{2\pi}{3}$ with the positive x-axis. Also, find the equation of line parallel to it and crossing the y-axis at a distance of 2 units below the origin.

35) The perpendicular from the origin to a line meets it at the point (-2, 9), find the equation of the line.

36) The owner of a milk store finds that, he can sell 980 litres of milk each week at Rs 14/litre and 1220 litres of milk each week at Rs 16/litre. Assuming a linear relationship between selling price and demand, how many litres could he sell weekly at Rs 17/litre?

37) P(a, b) is the midpoint of a line segment between axis. Show that equation of the line is $\frac{x}{a} + \frac{y}{b} = 2$

38) Point R(h, k) divides a line segment between the axis in the ratio 1: 2. Find equation of the line.

39) Find the distance of the point (-1, 1) from the line 12(x + 6) = 5(y - 2).

40) Find the points on the x-axis, whose distances from the line $\frac{x}{3} + \frac{y}{4} = 1$ are 4 units.

41) Find equation of the line parallel to the line 3x - 4y + 2 = 0 and passing through the point (-2, 3).

42) Find the equation of the right bisector of the line segment joining the points (3, 4) and (-1, 2).

43) The perpendicular from the origin to the line y = mx + c meets it at the point (-1, 2). Find the value of m and c.

44) In the triangle ABC with vertices A(2, 3), B (4, -1) and C(1, 2), find the equation and length of altitude from the vertex A.

45) Find the values of k for which the line $(k - 3)x - (4 - k^2)y + k^2 - 7k + 6 = 0$ is
(i) parallel to x-axis
(ii) parallel to y-axis
(iii) passing through origin.

46) Find the equations of the lines, which cut-off intercepts on the axes whose sum and product are 1 and –6, respectively.

47) What are the points on the y-axis whose distance from the line $\frac{x}{3} + \frac{y}{4} = 1$ is 4 units.

48) Find perpendicular distance from the origin to the line joining the points $(\cos\theta, \sin\theta)$ and $(\cos\phi, \sin\phi)$.

49) Find the equation of the line parallel to y-axis and drawn through the point of intersection of the lines x – 7y + 5 = 0 and 3x + y = 0.

50) Find the equation of a line drawn perpendicular to the line $\frac{x}{a} + \frac{y}{6} = 1$ through the point, where it meets the y-axis.

51) If three lines whose equations are $y = m_1x + c_1$, $y = m_2x + c_2$ and $y = m_3x + C_3$ are concurrent, then show that $m1\ (c_2 - c_3) + m_2\ (c_3 - c_1) + m_3\ (c_1 - c_2) = 0$.

52) Find the distance of the line 4x + 7y + 5 = 0 from the point (1, 2) along the line 2x - y = 0.

53) In which quadrant, the following points lie?
(6,-3)

54) In which quadrant, the following points lie?
(-4,1)

55) In which quadrant, the following points lie?
(-1,-1)

56) In which quadrant, the following points lie?
(5,4)

57) Find the new coordinates of point (3,-4), if the origin is shifted to (1,2) by a translation.

58) If the axes are shifted to the point (-2,3) without rotation, then transform the equation of line y+3x=2 into new axes.

59) The sum of the squares of the distances of a moving point from two points (a,0) and (-a,0) is equal to a constant quantity $2b^2$ Find the equation to its locus.

60) Find the distance between the points $P(\alpha \quad cos\alpha, \alpha \quad sin \quad \alpha)$ and $Q(\alpha \quad cos\beta, \alpha \quad sin \quad \beta)$

61) Find the slope of a line whose inclination is
30^0

62) Find the slope of a line whose inclination is
135^0

63) Find the inclination of a line whose slope is
$\frac{1}{\sqrt{3}}$

64) Find the inclination of a line whose slope is
$-\sqrt{3}$

65) Find the slope of a line which passes through the points
(0, -3) and (2,1)

66) Find the slope of a line which passes through the points
(-2,3) and (4,-6)

67) Find the slope of a line which passes through the points
$(at_1^2, 2at_1)$ and $(at_2^2, 2at_2)$

68) If the slope of the line joining the points a(x,2) and B(6,-8) is -5/4, find the value of x.

69) Find the slope and inclination of line through pair of points (1,2) and (5,6).

70) Find the slope of a line perpendicular to the line, which passes through (0,8) and (-5,2).

71) What is the value of y, so that the line through (3,y) and (2,7) is parallel to the line through (-1,4) and (0,6)?

72) Write down the equation of a line parallel to the y-axis, at a distance of 5 units on a left-hand side of the y-axis

73) Write down the equation of a line parallel to the y-axis, at a distance of 7 units on the right-hand side of the y-axis

74) Find the point on X-axis which is equidistant from the points(3,2) and(-5,-2).

75) Find the equation of the lines parallel to the axes and passing through the point(-3,5)

76) A point moves, so that the sum of its distances from (ae,0) and (-ae,0) is 2a , prove that the equation to its locus is $\frac{X^2}{a^2} + \frac{Y^2}{b^2} = 1$, where $b^2=a^2(1-e^2)$.

77) Find the equation of the line passing through(-4,3) and having slope $\frac{1}{2}$

78) Find the distances between the points A(2,-3) and B(6,3)

79) Find the distances between the points A(1,-4) and B(0,3)

80) Find the distances between the points P(3,4) and Q(0,0)

81) State whether the two lines in each of the following are parallel, perpendicular or neither.
Through (5,6) and (2,3); through (9, -2) and (6,-5)

82) State whether the two lines in each of the following are parallel, perpendicular or neither.
Through (6,3) and (1,1); through (-2,5) and (2,-5)

83) State whether the two lines in each of the following are parallel, perpendicular or neither.
Through (3,15) and (16,6); through (-5,3) and (8,2).

84) Find the angle between the lines whose slopes are
$\sqrt{3}\ and\ \frac{1}{\sqrt{3}}$

85) Find the angle between the lines whose slopes are
$(2-\sqrt{3})\ and\quad (2+\sqrt{3})$

86) Find the equation of the line which have slope 1/2 and cuts-off an intercept
(i)-5 on Y-axis

87) Find the equation of the line which have slope 1/2 and cuts-off an intercept
(ii) 4 on X-axis

88) Find the point on the X -axis which is equidistant from the points (7,6) and (3,4).

89) Find a point on Y-axis which is equidistance from A(-4,3) and B(5,2).

90) If A is a point on the X- axis with abscissa -5 and B is a point Y axis with ordinate 8.Find the distance AB.

91) Find the coordinates of the point which divides the join of P(-5,11) and Q(4,-7)in the ratio 2:7

92) Find the equation of the perpendicular bisector of the line segment joining the points the points A(2,3) and B(6,-5)

93) Find the slope of a line joining following two points
A(1,2) and B(3,-4)

94) Find the slope of a line joining following two points
(3,-2) and (7,-2)

95) Find the new coordinates of the points in each of the following cases if the origin is shifted to the point (-3,-2) by a translation of axes.(-1,-2)

96) Find the new coordinates of the points in each of the following cases if the origin is shifted to the point (-3,-2) by a translation of axes.(1,1)

97) Find the new coordinates of the points in each of the following cases if the origin is shifted to the point (-3,-2) by a translation of axes.(0,1)

98) Find the new coordinates of the points in each of the following cases if the origin is shifted to the point (-3,-2) by a translation of axes.(5,0)

99) Find the new coordinates of the points in each of the following cases if the origin is shifted to the point (-3,-2) by a translation of axes.(3,-5)

100) Show that the lines x-y-6=0, 4x-3y-20=0 and 6x+5y+8=0 are concurrent.

101) Find the distance of the point (2, -3) from the line 2x - 3y + 6 = 0.

102) Find the transformed equation of $xy-y^2-x+y=0$, when the origin is shifted to the point (1,1), after translation of axes.

103) Using the distance formula show that the points A(3,-2), B(5,2) and C(8,8) are collinear.

104) If verices of a triangle are P(1,3),Q(2,5)and R(3,-5),then find the centroid of a $\triangle$ PQR.

105) Find the length of perpendicular from, the point (a, b) to the line $\frac{x}{a}+\frac{y}{b}=1$.

106) Find the angle between the lines joining the points (0,0), (2,3), and the points (2,-2), (3,5).

107) Check whether the points (1,-3),(5,2) and(9,5) are collinear or not

108) Find the points on X-axis whose perpendicular distance from the line 4x + 3y = 12 is 4.

109) Find the equation of the lines which cut-off intercepts on the axes whose sum and product are 1 and -6 respectively.

110) Find the equation of the line upon which the length of perpendicular p from origin and the angle α made by this perpendicular with the positive direction of X - axis are p = 4, $\alpha = 120^o$

111) The perpendicular distance of the line from the origin is 7 cm and its slope is - 1. Find the equation of line.

112) Show that the points A(4,-1), B(6,0),C(7,2) and D(5,1) are the vertices of a rhombus.

113) If the points A(-2,-1),B(1,0),C(x,3) and D(1,y) are the verues of x and y(without using distance formula).

114) Find the area of $\triangle$ ABC, the mid-points of whose sides AB,BC and CA are D(3,-1),E(5,3) and F(1,-3), respectively.

115) In what ratio is the line segment joining the points A(-4,2) and B(8,3) divided by the Y-axis?Also, find the point of intersection.

116) If the lines ax + y + 1 = 0,x + by + 1 = 0 and x + y + c = 0 are concurrent c$\neq$ 1, prove that $\frac{1}{1-a}+\frac{1}{1-b}+\frac{1}{1-c}=1$.

117) Find the coordinates of a point on the line x + y + 3 = 0, whose distance from the line x + 2y + 2 = 0 is $\sqrt{5}$.

118) Find the area of $\triangle$ ABC,whose verices are A(6,3), B(-3,5) and C(4,-2)

119) Find the coordinates of the foot of the perpendicular from the point(2,3)on the line x+y-11=0

120) Find the equation of the straight line which passes through the point (1,-4) and the point of intersection of the lines x+y-3=0, 2x-y-7=0.

121) If the slope of a line passing through the point A(3,2) is, $\frac{3}{4}$ then find the points on the line which are 5 units away from the point A

122) Transform the equation of the line 3x + 2y - 7 = 0 to
(i) slope intercept form and also find the slope and y-intercept.
(ii) intercept form and also find the intercepts on the coordinate axes.
(iii) normal form and also find the inclination of the perpendicular segment from the origin on the line with the axis and its length.

123) Find the locus of a point which moves in such a way that the square of its distance from the point (3, -2) is numerically equal to its distance from the line 5x - 12y = 13.

124) Without using Pythagoras theorem, show that the points A(1,2), B(1,5) and C(5,2) are the vertices of a right angled triangle.

125) For what value of k are points (k,2 -2k),(-k + 1,2k) and (-4 - k,6- 2k) are collinear?

126) What is the value of y so that the line through (3,y) and (2,7) is parallel to the line through (-1,4) and (0,6)?

127) Find the equation of a line drawn perpendicular to the line $\frac{x}{4}+\frac{y}{6}=1$ through the point where it meets the y-axis

128) If point (a,0), (0,b) and (x,y) are collinear using the concept of slope. Prove that $\frac{x}{a}+\frac{y}{b}$ = 1.

129) Find the equation of line passing through the points(-1,1) and (2,-4)

130) Find the equation of the straight line passing through the following pair of points
(i) (0, 0) and (2, - 2)

131) Find the equation of the straight line passing through the following pair of points
(ii) (a, b) and (a + b, a - b)

132) Find the equation of a line parallel to the Y - axis at a distance of 6 units to its right

133) Find the equation of horizontal and vertical lines passing through the point (- 5, 6)

134) For specifying a straight line, how many geometrical parameters should be known?

135) Write the equation of a line, parallel to X - axis and 5 units below it.

136) Find the equation of a line, which is parallel to Y - axis and passes through (- 4, 3).

137) A line cutting off intercept - 3 from the Y - axis and the tangent at angle to the X - axis is $\frac{3}{5}$, Find its equation.

138) Find the equation of a line passing through the point (- 4, 3) with slope - 1/2.

139) Find the equation of a line, which passes through the point (2, 3) and makes an angle of 30^o with the positive direction of X - axis.

140) Find the equation of the line through the intersection of the lines 2x+3y-4=0 2x+3y-4=0 and x-5y=7 that has its x-intercept equal to -4.

141) Prove that A(4,3), B(6,4), C(5,6) and D(3,5) are the angular points of a square.

142) A variable line passes through a fixed point P. The algebraic sum of the perpendiculars drawn from the points (2, 0), (0, 2) and (1, 1) on the line is zero. Find the coordinates of the point P.

143) Reduce the lines 3x - 4y + 4 = 0 and 4x - 3y + 12 = 0 to the normal form and hence determine which lines is nearer to the origin.

144) Find the equation of a line which is perpendicular to the line joining the points (4,2) and (3,5) and cuts-off an intercept of length 3 on Y-axis.

145) Find the equation of the straight lines which passes through the origin and trisect the intercept of line 3x+4y=12 between the axes.

146) Find the angle between the lines x - 2y + 3 = 0 and 3x + y - 1 =0.

147) Find the equation of the right bisector of the line segment joining the points A(1,0) and B(2,3).

148) Find the equation of line joining th points (1, 1) and (2, 3).

149) If the line $\frac{x}{a} + \frac{y}{b} = 1$ passes through the points (2, -3) and (4, - 5), then find (a, b).

150) Find the equation of straight line, which passes through the point (5, 6) and has intercepts on the axes equal in magnitude but opposite in sign.

151) Find the equation of the straight line, which passes through the point (1, -2) and cuts- off equal intercepts from axes.

152) Find the equation of the line for which p = 2, sin $\alpha = \frac{4}{5}$

153) Find the equation of a line, which is equidistant from the lines x = - 2 and x = 6.

154) A straight line moves so that the sum of the reciprocals of its intercepts made on axes is constant. Show that the line passes through a fixed point.

155) Find the equation of the line passing through the point (5, 2) and perpendicular to the line joining the points (2, 3) and (3, - 1).

156) Find the equation of the line, where length of the perpendicular segment from the origin to the line is 4 and the inclination of the perpendicular segment with the positive direction of X - axis is 45^o

157) Find the equation of line passing through $(2,2\sqrt{3})$ and inclined with X - axis at an angle of 75^o

158) If p is the length of perpendicular from the origin on the line $\frac{x}{a} + \frac{y}{b} = 1$ and a^2 , p^2 and b^2 are in AP, then show that $a^4 + b^4 = 0$.

159) Find the equation of the line through the intersection of lines x+2y-3=0 and 4x-y+7=0 and which is parallel 5x+4y-20=0

160) 10 students are participating in a debate on "SAVE WILDLIFE", five students have to speak in favor and five students have to speak in favor and five students against. These students are standing on two lines face to face whose equations are 3x-y-4=0 and 6x-2y-4=0 for a debate. Are the student standing on parallel lines? During the debate which team you are in favor of?

161) If three points (h,0), (a,b) and (0,k) lie on a line, show that $\frac{a}{h} + \frac{b}{k} = 1$.

162) Reduce the following equation into slope intercept form and find their slopes and the y-intercepts y=0.

163) Five students wearing shirts with 'Save Environment' are standing on a beach represent by equation 3x+4y=16=0.
The spotlight is placed at the point (-1,3). What is the distance of spotlight from the bench? What message these do student want to give?

164) Reduce the following equations into intercepts form and find their intercepts on the axes
6x + y - 6 = 0

165) The line $\frac{x}{a} + \frac{y}{b}$ = 1 moves in such a way that $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c^2}$, where c is a constant. Find the locus of the foot of the perpendicular from the origin on the given line.

166) Reduce the following equations into intercepts form and find their intercepts on the axes
2y + 5 = 0

167) A line passing through the points (a, 2a) and (-2, 3) is perpendicular to the line 4x + 3y + 5 = 0, find the value of a.

168) Without using Pythagoras theorem, show that A(12,8), B(-2,6) and C(6,0) are the vertices of right angled triangle.

169) By using slope method, show that the points P(4,8), Q(5,2), and R(9,28) are collinear.

170) By using slope method, find the value of x for which the points A(5,1), B(1,-1) and C(x,4) are collinear.

171) A line passes through the points A(4,-6) and B(-2,-5). Show that the line AB makes an obtuse angle with the X-axis.

172) Reduce the equation $\sqrt{3x} + y = 4$ into normal form and hence find the values of p and a.

173) Find the equation of a line, whose inclination with X - axis is 150^o and which passes through the point (3, - 5).

174) The intercept cuts-off by a line from Y - axis is twice than that from X - axis and the line passes through the point (1, 2). Find the equation of the line.

175) the length of the perpendicular from the origin to a line is 7 and the line makes an angle of 120^o with the positive direction of Y - axis. Find the equation of the line.

176) If the coordinates of the middle point of the portion of a line intercepted between the coordinate axes is (3, 2), then find the equation of the line.

177) A line passes through P(1, 2) such that its intercept between the axes is bisected at P. Find the equation of line.

178) Find the value of m for which the lines mx + (2m + 3) y + m + 6 = 0 and (2m + 1)x + (m - 1)y + m - 9 = 0 intersect at a point on Y-axis.

179) Find the condition, if the two lines ax + by = c and a' x + b' y = c' are prependicular.

180) Find the equation of perpendicular line to line 3x + 5y + 6 = 0 and passing through a point (1, 2).

181) Find the distance between following parallel lines.
3x - 4 y + 9 and 6x - 8y - 15 = 0

182) Three sides AB, BC and CA of a $\triangle$ ABC are 5x - 3y + 2 = 0, x - 3y - 2 = 0 and x + y - 6 = 0, respectively. Find the equation of the altitude through the vertex A.

183) Find the angle between the straight lines whose equation are 3x + y - 7 = 0 and x + 2y + 9 = 0.

184) Find the slope of line, whose inclination is 60^0 and $150^{0.}$

185) Find the distance between following parallel lines.
l (x + y) + h = 0 and l (x + y) - r = 0

186) Find the inclination of the lines x - y + 3 = 0 with the positive direction of X-axis

187) Find the equation of the line passing through (1,2) and parallel to the line y = 3x - 1

188) Determine $\angle B$ of the triangle with vertices A(-2,1), B(2,3) and C(-2,-4).

189) A quadrilateral has the vertices at the points A(-4,2), B(2,6), C(8,5) and D(9,-7). Show that the mid-points of the sides of this quadrilateral are the vertices of a parallelogram.

190) Find the equation of the line passing through the point of intersection of 2x + y = 5 and x + 3y + 8 = 0 and parallel to the line 3x + 4y = 7

191) Find the equation of line passing through the point $(a\ cos^3\theta,\ a\ sin^3\ \theta)$ and perpendicular to the line $x \sec\theta + y\,\mathrm{cosec}\,\theta = a$.

192) Find the equation of the line midway between the parallel lines 9x + 6y - 7 = 0 and 3x + 2y + 6 = 0.

193) Find the equation of the straight line which bisects the distance between the points A(a, b), B(a', b') and also bisects the distance between the point C (- a, b) and D(a', - b').

194) Find the equation of lines passing through (1, 2) and making an angle 30^o with positive Y - axis, measured clockwise.

195) P(a, b) is the mid-point of a line segment between axes. Show that the equation of the line is $\frac{x}{a} + \frac{y}{b} = 2$

196) If θ is the angle between the diagonals of a parallelogram ABCD whose vertices are A(0,2), B(2,-1), C(4,0) and D(2,3). Show that tanθ=2.

197) Using slopes, show that the points A(-4,-1), B(-2,-4), C(4,0) and D(2,3) taken in order, are the vertices of a rectangle.

198) Find the area of a square, if two sides of a square are x + 2y + 3 = 0 and x + 2y = 5.

199) Show that the straight lines given by x(a + 2b) + y(a + 3b) = a + bfor different values of a nad b pass through a fixed point.

200) Find the distance of the point (3, -1) from the line 12x - 5y - 7 = 0.

201) Find the distance of the point P(1, -3) from the line 2y - 3x = 4.

202) Find the distance between the following pair of lines.
3x + 4y = 9 and 6x + 8y = 15

203) Find the values of θ and p, if the equation xcos θ +ysin θ =p is the normal form of the line $\sqrt{3x}$ +y+2=0

204) prove that the lines 3x + y - 14= 0, x - 2y = 0 and 3x - 8y + 4 = 0 are concurrent

205) The equation of two sides of a square are 5x - 12y - 65 = 0 and 5x - 12y + 26 = 0. Find the area of a square.

206) Find the values of k for which the length of perpendicular from the point (4,1) on the line 3x - 4y + k = 0 is 2 units.

207) The perpendicular distance of a line from the origin is 5 units and its slope is -1. Find the equation of the line.

208) Find the equation of the line passing through (1,2) and perpendicular to x + y + 7 = 0.

209) Find the coordinates of the foot of perpendiculars from the point (2,3) on the line y =3x + 4

210) Find the equation of the straight line passing through the point of intersection of the lines 5x - 6y -1 = 0 and 3x + 2y + 5 = 0 and perpendicular to the line 3x - 5y + 11= 0.

211) Show that the tangent of an angle between the lines $\frac{x}{a}+\frac{y}{b}=1 \quad and \quad \frac{x}{a}-\frac{y}{b}=1 \quad is \quad \frac{2ab}{a^2-b^2}$

212) Two lines passing through the point (2 , 3) make an angle of 45^0 . If the slope of one of the lines is 2, then find the slope of the other line

213) Prove that the line joining the mid-points of the two sides of a triangle is parallel to the third side.

214) A quadrilateral has the vertices at the points (4,1) (1,7), (-6,0) and (-1,9). Show that the mid-points of the sides of this quadrilateral are the vertices of a parallelogram.

215) Find the equation of the line through the point A(2, 3) and making an angle of 45° with the X-axis. Also, determine the length of intercept on it between A and the line x + y + 1 = 0.

216) Find the distance of the point (2, 3) from the line 2x-3y+9=0 measure along a line x-y+1=0.

217) Find the distance of the point (2, 5) from the line 3x + y + 4 = 0 measure parallel to the line 3x - 4y + 8 = 0.

218) Prove that the points A(2,3), B(6,7), C(6,9) and (2,5) are the vertices of a rectangle.

219) Find the equations of the bisectors of the angles between the coordinate axes

220) If A(2,0), B(0,2) and C(0,7) are three vertices taken in order of an isosceles trapezium ABCD in which. $AB \parallel DC$. Find the coordinates of D

221) Find the equation of one of the sides of an isosceles right angled triangle whose hypotenuse is given by 3x+4y=4 and the opposite vertex of the hypotenuse is (2,2)

222) Find the equation of a line which divides the join of (1,0) and (3,0) in the ratio 2:1 and perpendicular to it.

223) The length of the perpendicular from the origin to a line is 7 and the line makes an angle of 1500 with the positive direction of Y-axis.Find the equation of the line.

224) A line passing through the point (3, -2).Find the locus of the middle point of the portion of the line intercepted between the axes.

225) Find the equation of the line which passes through the point (-4 , 3) and the portion of the line intercepted between the axes is divided internally in the ratio 5 : 3 by this point

226) Find the equation of the line which passes through P (1, -7) and meets the axes at A and B respectively so that 4AP - 3BP = 0

227) Find the equation of the straight line passing through the origin and bisecting the portion of the line ax+by+c = 0 intercepted between the coordinate axes.

228) Find the equation of a straight line on which the perpendicular from the origin makes an angle 30° with X-axis and which forms a triangle of area $50/\sqrt{3}$ with the axes.

229) Find the image of the point (-8,12) with respect to the line mirror 4x+7y+13=0.

230) A stright line L is represents to the line 5x-y=1.The area of the triangle formed by the line L and the coordinate axes is 5 sq units.Find the equation of the line L.

231) The sides AB and AC of a $\triangle ABC$ are 2x+3y=29 and x+2y=16, respectively.If the mid-point of BC is (5,6), then find the equation of BC.

232) Find the equation of a line which divides the join of (1,0) and (3,0) in the ratio 2:1 and perpendicular to it.

233) Using the concept of slope, prove that medians of an equilateral triangle are perpendicular to the corresponding sides.

234) Using concept of slopes of parallel lines, show that points A(2, -1), B(1, 3) and C(3, -5) are collinear.

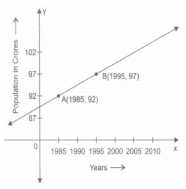
235) The line through points (5, 3) and (3, 4) is parallel to the line through (-2, 4) and (0, x). Find value of x.

236) Points (a, 0), (2, 2) and (0, b) are collinear. Prove that $\frac{1}{a}+\frac{1}{b}=\frac{1}{2}$

237) Find the angle between the lines whose slopes are $\frac{1}{2}$ and 3.

238) Find the value of x for which the points (x, -1), (2, 1) and (4, 5) are collinear.

239) Consider the following population and year graph, find the slope of the line AB and using it, find what will be the population in the year 2010?



240) Using concept of slopes of parallel lines, find value of x so that points (x, 8), (-4, 2) and (5, -1) are collinear.

241) Find the acute angle between straight lines whose slopes are $\frac{1}{3}$ and $-\frac{1}{2}$

242) If the angle between two lines is $\frac{\pi}{4}$ and slope of one of the lines is 2. Find slope of another line.

243) Find the angle between the lines joining the points (0, 0), (2, 3) and the points (2, - 2), (3,5).

244) What is the value of x so that the line through (3, x) and (2, 7) is parallel to the line through (-1, 4) and (0, 6).

245) Find the equation of a line with slope -4 and cutting off an intercept of 4 units on negative direction of y-axis.

246) Find the equation of a line that has y-intercept 2 and is perpendicular to the line joining (3, 4) and (2, -5).

247) Find the equation of a line through the point (2, - 3) and parallel to x-axis.

248) Find the equation of the line joining the points (- 2, 5) and (3, - 1).

249) Find the equation of the perpendicular bisector of the line segment joining the points (1, 2) and (3, 5).

250) Find the equation of the line which cuts off an intercept 2 on the positive direction of x-axis and an intercept 5 on the negative direction of y-axis.

251) The length of the perpendicular from the origin to a line is 4 and the line makes an angle of 30° with the positive direction of the x-axis.

252) Find the equation of a line which is parallel to y-axis and passes through (6, -2).

253) Find the equation of a straight line which cuts off an intercept of 3 units on negative direction of y-axis and makes an angle of 120° with the positive direction of x-axis.

254) Find the equation of a straight line which cuts off an intercept of length 5 on y-axis and is parallel to the line joining the points (5, -4) and (2, 5).

255) Find the equation of the perpendicular bisector of the line segment joining the points (2, 2) and (3,4).

256) Two lines passing through the point (4, 5) intersect each other at an angle of 60^{o}. If slope of one line is 2, find the equation of other line.

257) In what ratio does the line joining the points (2, 3) and (4, 1) divide the segment joining the points (1, 2) and (4, 3)?

258) Find the equations of the medians of a triangle, the coordinates of whose vertices are (-1, 6), (-3, -9) and (5, -8).

259) Find the equation of the lines which cut off intercepts on the axis whose sum and product are 5 and -6 respectively.

260) Find the equation of the line whose perpendicular distance from the origin is 9 units and the angle which the normal makes with the positive direction of x-axis is 15°.

261) Find the equation of a straight line upon which the length of the perpendicular from the origin is 2 and the slope of this perpendicular is $\frac{5}{12}$

262) Reduce 2x + 5y - 11= 0 to slope intercept form and find their slope and y-intercept.

263) Reduce 2x - y = 5 to intercept form and find the intercepts on the axis.

264) Reduce x - y = 6 to the normal form.

265) Find the length of the perpendicular from the point (2, -5) to the line joining the points (1, 4) and (3, 8).

266) Find the distance between the parallel lines 8x + 15y - 27 = 0 and 8x + 15y + 18 = 0.

267) Reduce the equation 5x - 3y + 11 = 0 to the slope-intercept form and find its slope and intercept.

268) Reduce the equation x - 2y - 5 = 0 to the intercept form and find their intercepts on the axis.

269) Reduce the equation x + y + $\sqrt{2}$ = 0 to the normal form and find p and α .

270) Find the equation of the line which is parallel to 2x - 3y + 1 = 0 and passes through the point (6, 2).

271) Find the equation of the straight line that passes through the point (2, -1) and perpendicular to the line 2x + 5y - 11 = 0.

272) Find the coordinates of the foot of the perpendicular drawn from the point (2, -3) on the line x- 2y + 3 = 0.

273) If the lines y = 3x + 1 and 2y = x + 3 are equally inclined to the line y = mx + 4, find the value of m.

274) Find the slope of the line which makes an angle of 60° with the line 2x - y + 7 = 0.

275) Find the values of K for which the line $(K - 3)x - (4 - K^2)y + K^2 - 7K + 6 = 0$ is
(a) Parallel to the x-axis
(b) Parallel to the y-axis,
(c) Passing through the origin.

276) Find the new transformed equation of the pair of straight lines $x^2 + 2xy - y^2+x-2 = 0$ when the origin is shifted to a point (-4, 1).

277) Find the equation of the straight line whose transformed equation is $3x + 2y - 5 = 0$ after shifting the origin to (2, -1).

278) Find the transformed equation of the parabola $y^2=4ax$ if the origin is shifted to (-3, 2).

279) Find the equation of the straight line which makes angle of 15° with the positive direction of x-axis and which cuts an intercept of length 5 on the negative direction of y-axis.

280) Find the new coordinates of point (a, -a) if the origin is shifted to (b, -b) by a translation.

281) find the transformed equation of the circle $x^2+y^2 = 9$ when the origin is shifted to (-1, -3).

282) Find the equation of the line passing through the intersection of the lines $2x - y + 3 = 0$ and $x + 2y + 1 = 0$ and parallel to y-axis.

283) Find the equation of the line passing through the intersection of the lines $ax + by + C = 0$ and $Ax + By + C = 0$ and which also passes through the origin.

284) Find the equation of the line passing through the point of intersection of the lines $2x - 5y = 11$ and $3x + y + 5 = 0$ and which is
(i) Parallel to x-axis
(ii) Parallel to y-axis.

285) Find the equation of the line which is perpendicular to $x - y = 8$ and passing through the intersection of the lines $x + 2y + 3 = 0$ and $3x + 4y + 7 = 0$.

286) Find the equation of the line perpendicular to the line $2x + y - 1 = 0$ through the intersection of the lines $x + 2y - 1 = 0$ and $y = x$.

287) Find the equation of the line passing through the intersection of the lines $3x - 4y + 1 = 0$ and $5x + y - 1 = 0$ which makes equal intercepts on the axes.

288) Find the transformed equation of $x - xy + y - 1 = 0$ when the origin is shifted to (-1, -2).

289) Find the transformed equal to $x^2+2x - 2y^2+2 = 0$ when the orgin is shifted to (-3, 2).

290) Find the new coordinates of a point (-3, 4) when the origin is shifted to(-1,2).

291) The coordinates of the new point are (6, -3). Find the coordinates of old point if the origin is shifted to (-3, -2).

292) Find the transformed equation of $xy+y^2-x+2y = 0$ if the origin is shifted to (2, -1).

293) Find the new coordinates of point (-4, 3) if the origin is shifted to (1, 2) by a translation.

294) Find the new coordinates of a point (3, - 4), if the origin is shifted to (1, 2) by a translation.

295) Find the transformed equation of the straight line $2x - 3y + 5 = 0$ when the origin is shifted to the point (3, -1) after translation of axes.

296) The new coordinates of a point are (2, -3) after shifting the origin to (3, 4). Find the old coordinates of the point.

297) The origin is shifted on the x-axis through a distance of 3. Find the new coordinates of a given point (-2, 4).

298) Find the new transformed equation of the straight line $5x + 2y - 7 = 0$ when the origin is shifted to (-4, -5).

299) Find the equation of a straight line perpendicular to the line joining the points (1, -3) and (2, 1) and cutting off intercept - 4 from the x-axis.

300) Find the equation of straight line parallel to $2x + 3y - 7 = 0$ and passing through (0, 3).

301) Find the equation of straight lines, the sum of whose intercepts on the axis is -2 and product is -15.

302) The x intercept cut off by the line $3x + ky + 7 = 0$ is equal to twice the y intercept. Find the value of k

303) Find the distance of the straight line $2x + y = 4$ from point (-1, 2) measured along a line making an angle of 1350 with the positive direction of x-axis .

304) Find the equation of the straight line passing through the point of intersection of $x + y - 5 = 0$ and $2x + 3y - 12 = 0$ and perpendicular to the line $x - 3y = 5$

305) Find the perpendicular distance of the point of intersection of the lines $2x + 3y - 7 = 0$, $3x + 4y - 10 = 0$ from the line $2x - 4y + 10 = 0$.

306) The vertices of a triangle are (-1, 4), (3, 2) and (1, -6). Show that the medians are concurrent.Hence find the coordinates of the centriod.

307) Find the equation of the perpendicular bisector of the line joining points (3, 4) and (-1, -2).

308) The co-ordinates of the foot of perpendicular from the point (3, -4) to a straight line are (2,3). Find the equation of the line.

309) Find the equation of line parallel to the y-axis and drawn through the point of intersection of the lines $x - 7y + 5 = 0$ and $3x + y - 7 = 0$.

310) Find the equation of line passing through the point (2, -3) and the point of intersection of the lines $2x - y + 5 = 0$ and $x + 3y + 11 = 0$

311) Find the equation of the line passing through the intersection of the lines $3x - 4y + 1 = 0$ and $5x+y-1=0$ which cuts off equal intercepts from the axes.

312) Find the equation of a line passing through the intersection of the lines $2x + 3y - 2 = 0$ and $x - 2y + 1 = 0$ and having x-intercept 3.

313) Reduce the following equations into slope-intercept form and find their slopes and the y-intercepts.
(ii) $6x + 3y - 5 = 0$

314) Find the distance between parallel lines $l(x + y) + p = 0$ and $l(x + y) - r = 0$

315) Find the coordinate of the orthocentre of the triangle whose vertices are (-1, 3),(2,- 1) and (0,0).

316) If the line joining two points A(2, 0) and B(3, 1) is rotated about A in anti-clockwise direction through an angle of 15°. Find the equation of the line in new position.

317) By using the concept of equation of a line, prove that the points A(3, 0), B(- 2, - 2)and C(8, 2)are collinear.

318) Find the equation of a straight line on which length of perpendicular from the origin is four units and the line makes an angle of120° with the positive direction of X-axis

319) The vertices of Δ PQR are P(2, 1),Q(- 2, 3) and R(4, 5).Find the equation of the median through the vertex Q.

320) Find the equation of line, which intersect the Y-axisat a distance of 2 units above the origin and making an angle of 60° with positive direction of X -axis.

321) Find the equation of line, whose perpendicular distance from the origin is 5 units and the angle made by the perpendicular with the positive X-axis is 30°.

3 Marks 22 x 3 = 66

322) Find equation of the line passing through the point (2,2) cutting off intercepts on the axes whose sum is 9

323) The base of an equilateral triangle with side 2a lies along the Y-axis such that the mid point of the base is at the origin.Find vertices of the triangle.

324) If p and q are the lengths of perpendiculars from the origin to the lines $x\cos\theta - y\sin\theta = k\cos 2\theta$ and $x \sec\theta + y \operatorname{cosec}\theta = k$, respectively, prove that $p^2 + 4q^2 = k^2$.

325) Find the angle between the lines $\sqrt{3x} + y = 1$ and $x + \sqrt{3y} = 1$.

326) If sum of the perpendicular distances of a variable point P (x, y) from the lines $x + y - 5 = 0$ and $3x - 2y + 7 = 0$ is always 10. Show that P must move on a line.

327) Find equation of the line which is equidistant from parallel lines $9x + 6y - 7 = 0$ and $3x + 2y + 6 = 0$.

328) Find the slope of the lines:
(a) Passing through the points (3, – 2) and (–1, 4),
(b) Passing through the points (3, – 2) and (7, – 2),
(c) Passing through the points (3, – 2) and (3, 4),
(d) Making inclination of 60° with the positive direction of x-axis.

329) Line through the points (–2, 6) and (4, 8) is perpendicular to the line through the points (8, 12) and (x, 24). Find the value of x.

330) Three points P (h, k), Q (x_1, y_1) and R (x_2, y_2) lie on a line. Show that $(h - x_1)(y_2 - y_1) = (k - y_1)(x_2 - x_1)$.

331) Find the equations of the lines parallel to axes and passing through (– 2, 3).

332) Find the equation of the line through (– 2, 3) with slope – 4.

333) Write the equation of the line through the points (1, –1) and (3, 5).

334) Write the equation of the lines for which $\tan\theta = \frac{1}{2}$ where θ is the inclination of the line and (i) y-intercept is $-\frac{3}{2}$ (ii) x-intercept is 4.

335) Find the equation of the line, which makes intercepts –3 and 2 on the x- and y-axes respectively.

336) Find the distance of the point (3, – 5) from the line $3x - 4y - 26 = 0$.

337) Find the distance between the parallel lines $3x - 4y + 7 = 0$ and $3x - 4y + 5 = 0$

338) If the lines $2x + y - 3 = 0$, $5x + ky - 3 = 0$ and $3x - y - 2 = 0$ are concurrent, find the value of k.

339) Find the distance of the line $4x - y = 0$ from the point P (4, 1) measured along the line making an angle of 135° with the positive x-axis.

340) Assuming that straight lines work as the plane mirror for a point, find the image of the point (1, 2) in the line $x - 3y + 4 = 0$.

341) Show that the area of the triangle formed by the lines $y = m_1x + c_1, y = m_2x + c_2$ and $x = 0$ is $\frac{(c_1 - c_2)^2}{2|m_1 - m_2|}$

342) A line is such that its segment between the lines $5x - y + 4 = 0$ and $3x + 4y - 4 = 0$ is bisected at the point (1, 5). Obtain its equation

343) Show that the path of a moving point such that its distances from two lines $3x - 2y = 5$ and $3x + 2y = 5$ are equal is a straight line.

Case Study Questions 4 x 4 = 16

344) **Read the Case study given below and attempt any 4 sub parts:**

villages of Shanu and Arun's are 50km apart and are situated on Delhi Agra highway as shown in the following picture. Another highway YY' crosses Agra Delhi highway at O(0,0). A small local road PQ crosses both the highways at pints A and B such that OA=10 km and OB =12 km. Also, the villages of Barun and Jeetu are on the smaller high way YY'. Barun's village B is 12km from O and that of Jeetu is

15 km from O.

Now answer the following questions:

What are the coordinates of A?

(a) (10, 0)

(b) (10, 12)

(c) (0,10)

(d) (0,15)

What is the equation of line AB?

(a) 5x + 6y = 60

(b) 6x + 5y = 60

(c) x = 10

(d) y = 12

What is the distance of AB from O(0, 0)?

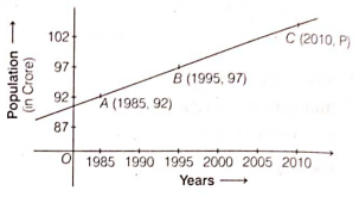
(a) 60 km

(b) 60/√61 km

(c) √61 km

(d) 60 km

345) Population vs Year graph given below



Based on the above information answer the following questions.

(i) The slope of line AB is

(a) 2 **(b) 1** **(c) 1/2** **(d) 1/3**

(ii) The equation of line AB is

(a) x + 2y = 1791 **(b) x - 2y = 1801** **(c) x - 2y = 1791** **(d) x - 2y + 1801 = 0**

(iii) The population (in crores) in year 2010 is

(a) 104.5 **(b) 119.5** **(c) 109.5** **(d) None of these**

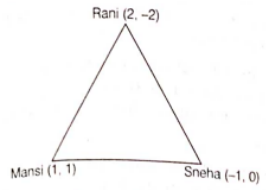
(iv) The equation of line perpendicular to line AB and passing through (1995, 97) is

(a) 2x - y = 4087 **(b) 2x + y = 4087** **(c) 2x + y = 1801** **(d) None of these**

(v) In which year the population becomes 110 cr is

(a) 2020 **(b) 2019** **(c) 2021** **(d) 2022**

346) Three girls, Rani, Mansi, Sneha are talking to each other while maintaining a social distance due to covid - 19. They are standing on vertices of a triangle, whose coordinates are given.



Based on the above information answer the following questions.

(i) The equation of lines formed by Rani and Mansi is

(a) 3x−y=4 (b) 3x+y=4 (c) x−3y=4 (d) x+3y=4

(ii) Slope of equation of line formed by Rani and Sneha is

(a) $\frac{2}{3}$ **(b)** $\frac{-3}{2}$ **(c)** $\frac{-2}{3}$ **(d)** $\frac{1}{3}$

(iii) The equation of median of lines through Rani is

(a) 5x +4y= 2 (b) 5x−4y=2 (c) 4x−5y=1 (d) None of these

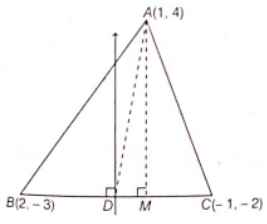
(iv) The equation of altitude through Mansi is

(a) 3 x-2 y=1 (b) 2x+3 y=5 (c) x+2 y=3 (d) None of these

(v) The equation of line passing through the Rani and parallel to line formed by Mansi and Sneha is

(a) x-2 y=4 (b) x+2 y=6 (c) x-2 y=6 (d) 2x+y=4

347) Consider the ΔABC with vertices A(1, 4), B(2, - 3) and C(- 1, - 2) as shown in the given figure. AD is the median and AM is the altitude through A.



Based on the above information answer the following questions.

(i) Find the distance between A and C.

(a) $\sqrt{40}$ **units (b)** $\sqrt{53}$ **units (c)** $\sqrt{41}$ **units (d)** $\sqrt{29}$ **units**

(ii) Slope of equation of line formed by Rani and Sneha is

(a) $\frac{2}{3}$ **(b)** $\frac{-3}{2}$ **(c)** $\frac{-2}{3}$ **(d)** $\frac{1}{3}$

(iii) Find the equation of median through A.

(a) x - 13y + 9 = 0 (b) x + 13y - 9 = 0 (c) 13x - y - 9 = 0 (d) 2x - 13y + 9 = 0

(iv) Find the equation of the altitude through A.

(a) 3x - y + 1 = 0 (b) x + 2y - 3 = 0 (c) x - 3y + 2 = 0 (d) 3x + 2y - 2 = 0

(v) Find the equation of right bisector of side BC.

(a) x + 13y - 3 = 0 (b) x - 3y + 3 = 0 (c) 3x - y - 4 = 0 (d) 3x + y - 2 = 0

5 Marks 50 x 5 = 250

348) Reduce the following equation into slope intercept form and find their slopes and the y-intercepts

(i) x + 7y = 0,

(ii) 6x + 3y – 5 = 0,

(iii) y = 0.

349) Find the distance between parallel lines

(i) 15x + 8y – 34 = 0 and 15x + 8y + 31 = 0

(ii) l (x + y) + p = 0 and l (x + y) – r = 0

350) Find the equation of the line passing through the point of intersection of the lines 4x + 7y – 3 = 0 and 2x – 3y + 1 = 0 that has equal intercepts on the axes.

351) show that the equation of the line passing through the origin and making an angle θ with the line $y = mx + c$ is $\frac{y}{x} = \frac{m \pm \tan,}{1 \mp m \tan,}$.

352) Reduce the following equations into intercept form and find their intercepts on the axes.
(i) 3x + 2y - 12 = 0,
(ii) 4x - 3y = 6,
(iii) 3y + 2 = 0.

353) Find the area of the triangle formed by the lines y - x = 0, x + y = 0 and x - k = 0.

354) Find the equation of the lines through the point (3, 2) which make an angle of 45° with the line x - 2y = 3.

355) Find the direction in which a straight line must be drawn through the point (-1,2) so that its point of intersection with the line x + y = 4 may be at a distance of 3 units from this point.

356) The hypotenuse of a right angled triangle has its ends at the points (1, 3) and (– 4, 1). Find an equation of the legs (perpendicular sides) of the triangle which are parallel to the axes.

357) Find the image of the point (3, 8) with respect to the line x +3y = 7 assuming the line to be a plane mirror.

358) If the lines y = 3x + 1and 2y = x + 3 are equally inclined to the line y = mx + 4, find the value of m.

359) Prove that the product of the lengths of the perpendiculars drawn from the points $(\sqrt{a^2-b^2},0)$ and $(-\sqrt{a^2-b^2},0)$ to the line $\frac{x}{a}cos\theta+\frac{y}{b}sin\theta=1$ is b^2

360) A person standing at the junction (crossing) of two straight paths represented by the equations 2x – 3y + 4 = 0 and 3x + 4y – 5 = 0 wants to reach the path whose equation is 6x – 7y + 8 = 0 in the least time. Find equation of the path that he should follow.

361) Draw a quadrilateral in the Cartesian plane, whose vertices are (– 4, 5), (0, 7), (5, – 5) and (– 4, –2). Also, find its area

362) If A (1,4), B (2,-3) and C(-1,-2) are the vertices of a $\triangle$ ABC, find the equation of the median through A

363) If A (1,4), B (2,-3) and C(-1,-2) are the vertices of a $\triangle$ ABC, find the equation of the altitude through A

364) If A (1,4), B (2,-3) and C(-1,-2) are the vertices of a $\triangle$ABC, find the equation of the perpendicular bisector of BC

365) Find the equation of the lines passing through the point (1,0) and at a distance $\frac{\sqrt{3}}{2}$ from the origin.

366) Reduce the question x-$\sqrt{3y}$ +8=0 into normal form.Find the perpendicular distance from the origin and angle between perpendicular and the positive X-axis.

367) Thr points A(2, 3), B(4, -1) and C(-1,2) are the vertices of Δ ABC. Find the length of perpendicular from C on AB hence find the area of Δ ABC.

368) Find the values of k for which the line (k - 3)x - (4 - k^2)y + k^2 - 7k + 6 = 0 is parallel to the X-axis

369) Find the values of k for which the line (k - 3)x - (4 - k^2)y + k^2 - 7k + 6 = 0 is parallel to the y-axis.

370) Find the values of k for which the line (k - 3)x - (4 - k^2)y + k^2 - 7k + 6 = 0 is passing through origin.

371) Find the angle between the lines y = (2 -$\sqrt{3}$) (x + 5) and y = (2 + $\sqrt{3}$)(x - 7)

372) Prove that the product of length of perpendicular drawn the points $\left(\sqrt{a^2-b^2},0\right)$ and $\left(-\sqrt{a^2-b^2},0\right)$ to the line $\frac{x}{a}cos\theta+\frac{y}{b}sin\theta=1 is\ b^2$.

373) If lines whose equation are y = m_1x + c_1 , y =m_2x + c_2 and y = m_3x + c_3 at a point then prove that $m_1(c_2-c_3)+m_2(c_3-c_1)+m_3(c_1-c_2)=0$

374) Find the equation of line parallel to Y-axis and drawn through the point of intersection of the lines x-7y+5=0 and 3x+y=0.

375) obtain the equation of lines passing through the intersection of lines 4x-3y-1=0 and 2x-5y+3=0 and equally inclined to the axes.

376) If a,b,c are variable such that 3a+2b+4c=0, then show that the family of lines given by ax+by+c=0 pass through a fixed point.Also, find the point.

377) Find the equation of the lines which pass through the point (3,-2) and are inclined at 60^0 to the line $\sqrt{3x}$ +y=1.

378) Find whether the two straight lines in each of the following are parallel or perpendicular.
(i) A(5, 6) and B(2, 3) ; C(9, -2) and D(6, -5)
(ii) A(3, 4) and B(4, 6) ; C(-l, 2) and D(-13, 8)

379) Reduce the following equations into normal form. Find their perpendicular distances from the origin and angle between perpendicular x-axis.
(i) x - $\sqrt{3}$ y + 8 = 0,
(ii) y - 2 = 0,
(iii) x - y = 4.

380) Find the equation of the line passing through the point of intersection of the lines 4x + 7y - 3 = 0 and 2x - 3y + 1 = 0 that has equal intercepts on the axis.

381) Show that the equation of the line passing through the origin and making an angle θ with the line y = mx + c is $\frac{y}{x} = \frac{m \pm \tan\theta}{1 \pm m\tan\theta}$

382) Find the equation of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ when the origin is shifted to (-3, 2).

383) Find the equation of the line that passes through the intersection of the lines 2x + 3y -1 = 0 and x + 5y + 4 = 0 and whose intercepts on the axes are same.

384) Find the equation of the line passing through the intersection of the lines 4x - 3y + 7 = 0 and 2x - 3y + 5 = 0 and which is inclined at an angle of 135° with the x-axis.

385) Find the equation of the line passing through the point of intersection of the lines 3x - 5y + 11= 0 and x + 7y - 1 = 0 and which is parallel to x-axis.

386) Reduce the lines 6x - 8y + 7 = 0 and 8x - 6y + 11 = 0 to the normal form and hence determine which line is nearer to the origin.

387) Find the equations of the medians of a triangle formed by the lines x + y - 6 = 0, x - 3y - 2 = 0 and 5x - 3y + 2 = 0.

388) Find the equation of line passing through the intersection of lines 2x-5y+9=0 and x+2y+3=0 and which is parallel to the line 3x + 4y + 7 = 0.

389) Find the equations of the line through the intersection of lines 3x + 4y = 7 and x - y + 2 = 0 and whose slope is 5

390) Find the equation of the line through the intersection of 5x - 3y = 1 and 2x + 3y - 23 = 0 and perpendicular to the line 5x - 3y - 1= 0.

391) Find the equation of line passing through the point of intersection of lines x-7y+5 = 0 and 3x+y-7=0 and perpendicular to the line 2x-5y+1 = 0.

392) Find the equation of the line passing through the point of intersection of the lines x - 3y + 1 = 0 and 2x + 5y - 9 = 0 and whose distance from the origin is √5.

393) Find the new coordinates in each of the following cases if the origin is shifted to the point (-3, -2) by a translation of axes. (i) (1, 1) (ii) (0, 1) (iii) (5, 0) (iv) (-1, -2) (v) (3, -5)

394) Find what the following equation become when the origin is shifted to (1, 1). (i) x^2+xy-3y^2-y+2=0, (ii) xy-y^2-x+y=0, (iii) xy-x-y+1=0

395) Find the equations of the altitudes of a Δ ABC, whose vertices are A(2, - 2),B(1, 1)and C(-1, 0).

396) Find the equations of the medians of a Δ ABC, whose vertices are A(2, 5),B (-4, 9) and C(-2, -1).

397) Find the ratio in which the line 3x+4y+2 = 0 divides the distance between the lines 3x+4y+5 = 0 and 3x+4y-5 = 0.

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