RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308

4. trignometry 1 mark

Date : 05-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 00:50:00 Hrs

Total Marks : 50

FOR ANSWERS JOIN WHATSAPP GROUP - 8056206308 [FEES RS.500 PER YEAR UNLIMITED PAPERS]

45 x 1 = 45

1) The value of $\sin^{-1}(\cos x), 0 \leq x \leq \pi$ is

(a) $\pi - x$ (b) $x - \frac{\pi}{2}$ (c) $\frac{\pi}{2} - x$ (d) $\pi - x$

2) If $\sin^{-1} x + \sin^{-1} y = \frac{2\pi}{3}$; then $\cos^{-1}x + \cos^{-1} y$ is equal to

(a) $\frac{2\pi}{3}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{6}$ (d) π

3) $sin^{-1}\frac{3}{5} - cos^{-1}\frac{12}{13} + sec^{-1}\frac{5}{3} - cosec^{1-}\frac{13}{2}$ is equal to

(a) 2π (b) π (c) 0 (d) $\tan^{-1}\frac{12}{65}$

4) If $\sin^{-}1x = 2\sin^{-1}\alpha$ has a solution, then

(a) $|\alpha| \leq \frac{1}{\sqrt{2}}$ (b) $|\alpha| \geq \frac{1}{\sqrt{2}}$ (c) $|\alpha| < \frac{1}{\sqrt{2}}$ (d) $|\alpha| > \frac{1}{\sqrt{2}}$

5) $\sin^{-1}(\cos x) = \frac{\pi}{2} - x$ is valid for

(a) $-\pi \leq x \leq 0$ (b) $0\pi \leq x \leq 0$ (c) $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$ (d) $-\frac{\pi}{4} \leq x \leq \frac{3\pi}{4}$

6) If $\sin^{-1} x + \sin^{-1} y + \sin^{-1} z = \frac{3\pi}{2}$, the value of $x^{2017} + y^{2018} + z^{2019} - \frac{9}{x^{101} + y^{101} + z^{101}}$ is

(a) 0 (b) 1 (c) 2 (d) 3

7) If $\cot - 1x = \frac{2\pi}{5}$ for some $x \in R$, the value of $\tan^{-1} x$ is

(a) $\frac{-\pi}{10}$ (b) $\frac{\pi}{5}$ (c) $\frac{\pi}{10}$ (d) $-\frac{\pi}{5}$

8) The domain of the function defined by $f(x) = \sin^{-1}\sqrt{x-1}$ is

(a) [1,2] (b) [-1,1] (c) [0,1] (d) [-1,0]

9) If $x = \frac{1}{5}$, the valur of $\cos(\cos^{-1}x + 2\sin^{-1}x)$ is

(a) $-\sqrt{\frac{24}{25}}$ (b) $\sqrt{\frac{24}{25}}$ (c) $\frac{1}{5}$ (d) $-\frac{1}{5}$

10) $tan^{-1}\left(\frac{1}{4}\right) + tan^{-1}\left(\frac{2}{3}\right)$ is equal to

(a) $\frac{1}{2}cos^{-1}\left(\frac{3}{5}\right)$ (b) $\frac{1}{2}sin^{-1}\left(\frac{3}{5}\right)$ (c) $\frac{1}{2}tan^{-1}\left(\frac{3}{5}\right)$ (d) $tan^{-1}\left(\frac{1}{2}\right)$

11) If the function $f(x)\sin^{-1}(x^2-3)$, then x belongs to

(a) [-1,1] (b) $[\sqrt{2}, 2]$ (c) $\left[-2, -\sqrt{2}\right] \cup \left[\sqrt{2}, 2\right]$ (d) $\left[-2, -\sqrt{2}\right] \cap \left[\sqrt{2}, 2\right]$

12) If $\cot^{-1} 2$ and $\cot^{-1} 3$ are two angles of a triangle, then the third angle is

(a) $\frac{\pi}{4}$ (b) $\frac{3\pi}{4}$ (c) $\frac{\pi}{6}$ (d) $\frac{\pi}{3}$

13) $sin^{-1}\left(tan\frac{\pi}{4}\right) - sin^{-1}\left(\sqrt{\frac{3}{x}}\right) = \frac{\pi}{6}$ .Then x is a root of the equation

(a) $x^2 - x - 6 = 0$ (b) $x^2 - x - 12 = 0$ (c) $x^2 + x - 12 = 0$ (d) $x^2 + x - 6 = 0$

14) $\sin^{-1}(2\cos^2 x - 1) + \cos^{-1}(1 - 2\sin^2 x) =$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{6}$

15) If $cot^{-1}\left(\sqrt{sin\alpha}\right) + tan^{-1}\left(\sqrt{sin\alpha}\right) = u$, then cos2u is equal to

(a) $\tan^2\alpha$ (b) 0 (c) -1 (d) $\tan 2\alpha$

16) If $|x| \leq 1$, then $2\tan^{-1} x - \sin^{-1}\frac{2x}{1+x^2}$ is equal to

(a) $\tan^{-1}x$ (b) $\sin^{-1}x$ (c) 0 (d) π

17)

The equation $\tan^{-1}x-\cot^{-1}x=\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$ has

(a) no solution (b) unique solution (c) two solutions (d) infinite number of solutions

18) If $\sin^{-1}x+\cot^{-1}\left(\frac{1}{2}\right)=\frac{\pi}{2}$, then x is equal to

(a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{5}}$ (c) $\frac{2}{\sqrt{5}}$ (d) $\frac{\sqrt{3}}{2}$

19) If $\sin^{-1}\frac{x}{5}+cosec^{-1}\frac{5}{4}=\frac{\pi}{2}$, then the value of x is

(a) 4 (b) 5 (c) 2 (d) 3

20) $\sin(\tan^{-1}x)$, $|x|<1$ ia equal to

(a) $\frac{x}{\sqrt{1-x^2}}$ (b) $\frac{1}{\sqrt{1-x^2}}$ (c) $\frac{1}{\sqrt{1+x^2}}$ (d) $\frac{x}{\sqrt{1+x^2}}$

21) If $tan^{-1}\left\{\frac{\sqrt{1+x^2}-\sqrt{1-x^2}}{\sqrt{1+x^2}+\sqrt{1-x^2}}\right\}=\alpha$ then x^2 =

(a) $sin2\alpha$ (b) $sin\alpha$ (c) $cos2\alpha$ (d) $cos\alpha$

22) If $sin^{-1}x-cos^{-1}x=\frac{\pi}{6}$ then

(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{-1}{2}$ (d) none of these

23) The number of solutions of the equation $tan^{-1}2x+tan^{-1}3x=\frac{\pi}{4}$

(a) 2 (b) 3 (c) 1 (d) none

24) If $\alpha=tan^{-1}\left(tan\frac{5\pi}{4}\right)$ and $\beta=tan^{-1}\left(-tan\frac{2\pi}{3}\right)$ then

(a) $4\alpha=3\beta$ (b) $3\alpha=4\beta$ (c) $\alpha-\beta=\frac{7\pi}{12}$ (d) none

25) The number of real solutions of the equation $\sqrt{1+cos2x}=2sin^{-1}(sinx)$, $-\pi<x<\pi$ is

(a) 0 (b) 1 (c) 2 (d) infinte

26) ·If $\alpha=tan^{-1}\left(\frac{\sqrt{3}}{2y-x}\right), \beta=tan^{-1}\left(\frac{2x-y}{\sqrt{3y}}\right)$ then $\alpha-\beta$

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{2}$ (d) $\frac{-\pi}{3}$

27) $tan^{-1}\left(\frac{1}{4}\right)+tan^{-1}\left(\frac{2}{11}\right)$ =

(a) 0 (b) $\frac{1}{2}$ (c) -1 (d) none

28) If $\tan^{-1}(3)+\tan^{-1}(x)=\tan^{-1}(8)$then x=

(a) 5 (b) $\frac{1}{5}$ (c) $\frac{5}{14}$ (d) $\frac{14}{5}$

29) The value of $cos^{-1}\left(\frac{cos5\pi}{3}\right)+sin^{-1}\left(\frac{sin5\pi}{3}\right)$ is

(a) $\frac{\pi}{2}$ (b) $\frac{5\pi}{3}$ (c) $\frac{10\pi}{3}$ (d) 0

30) $sin\left\{2cos^{-1}\left(\frac{-3}{5}\right)\right\}=$

(a) $\frac{6}{15}$ (b) $\frac{24}{25}$ (c) $\frac{4}{5}$ (d) $\frac{-24}{25}$

31) If $4cos^{-1}x + sin^{-1}x = \pi$ then x is

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

32) If $tan^{-1}\left(\frac{x+1}{x-1}\right) + tan^{-1}\left(\frac{x-1}{x}\right) = tan^{-1}(-7)$ then x Is

(a) 0 (b) -2 (c) 1 (d) 2

33) If $cos^{-1}x > x > sin^{-1}x$ then

(a) $\frac{1}{\sqrt{2}} < x \leq 1$ (b) $0 \leq x < \frac{1}{\sqrt{2}}$ (c) $-1 \leq x < \frac{1}{\sqrt{2}}$ (d) x > 0

34) In a ΔABC if C is a right angle, then $tan^{-1}\left(\frac{a}{b+c}\right) + tan^{-1}\left(\frac{b}{c+a}\right) =$

(a) $\frac{\pi}{3}$ (b) $\frac{\pi}{4}$ (c) $\frac{5\pi}{2}$ (d) $\frac{\pi}{6}$

35) $cot\left(\frac{\pi}{4} - cot^{-1}3\right)$

(a) 7 (b) 6 (c) 5 (d) none

36) If $tan^{-1}(cot\theta) = 2\theta, then\theta$ =

(a) ± 3 (b) $\pm\frac{\pi}{4}$ (c) $\pm\frac{\pi}{6}$ (d) none

37) The domain of $\cos^{-1}(,x^2 - 4)$ Is_____

(a) [3,5] (b) [-1. 1] (c) $\left[-\sqrt{5}, -\sqrt{3}\right] \cup \left[\sqrt{3}, \sqrt{5}\right]$ (d) [0,1]

38) The value of tan $\left(cos^{-1}\frac{3}{5} + tan^{-1}\frac{1}{4}\right)$ is _____

(a) $\frac{19}{8}$ (b) $\frac{8}{19}$ (c) $\frac{19}{12}$ (d) $\frac{3}{4}$

39) The value of $\sin(2(\tan^{-1} 0.75)$ is_____

(a) 0.75 (b) 1.5 (c) 0.96 (d) $\sin^{-1}(1.5)$

40) If x > 1,then $2tan^{-1}x + sin^{-1}\left(\frac{2x}{1+x^2}\right)$ _____

(a) $4\tan^{-1}x$ (b) 0 (c) $\frac{\pi}{2}$ (d) π

41) If $\theta = sin^{-1}\left(sin(-60^0)\right)$ then one of the possible values of θ is _____

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

42) The value of $sin^{-1}\left(cos\frac{33\pi}{5}\right)$ is_____

(a) $\frac{3\pi}{5}$ (b) $\frac{-\pi}{10}$ (c) $\frac{\pi}{10}$ (d) $\frac{7\pi}{5}$

43) If x < 0, y < 0 such that xy = 1, then $\tan^{-1}(x) + \tan^{-1}(y)$ =_____

(a) $\frac{\pi}{2}$ (b) $\frac{-\pi}{2}$ (c) $-\pi$ (d) none

44)

The pricipal value of is _____

(a) $\frac{\pi}{6}$ (b) $\frac{-\pi}{6}$ (c) $\frac{\pi}{3}$ (d) $\frac{-2\pi}{3}$

45) $tan^{-1}\left(tan\frac{9\pi}{8}\right)$

(a) $\frac{9\pi}{8}$ (b) $\frac{9\pi}{8}$ (c) $\frac{\pi}{8}$ (d) $\frac{-\pi}{8}$

CHOOSE ODD ONE OUT 5 x 1 = 5

46) (1) Domain is $(-\infty,-1]\cup[1,\infty)$

(2) Range is $\left(\frac{-\pi}{2},\frac{\pi}{2}\right)-\{0\}$

(3) Odd function

(4) Periodic function

47) (1 tan(tan-1x)= x if $x\epsilon R$

(2) $sin^{-1}\left(\frac{1}{x}\right)=cosec\quad x\quad if\quad x\epsilon R(-4/1)$

(3) $cos^{-1}\left(\frac{1}{x}\right)=sec\quad x\quad if\quad x\epsilon R(-1/1)$

(4)

$$\tan^{-1}\left(\frac{1}{x}\right)=\begin{cases}\cot^{-1}x, & \text{if}\quad x>0\\ -\mathrm{A}+\cot^{-1} & \text{if}\quad x<0\end{cases}$$

48) (1) The x- intercept is 1 and the y- intercept is $\frac{\pi}{2}$

(2) It is an even function

(3) Not symmetric with respect to origin

(4) Not symmetric with respect to y-axis

49) (1) $sin^{-1}x=cos^{-1}\sqrt{1-x^2}$ if $0\le x\le 1$

(2) $sin^{-1}x=-cos^{-1}\sqrt{1-x^2}$ if $-1\le x\le 0$

(3) $cos^{-1}x=sin^{-1}\sqrt{1+x^2}$ if $0\le x\le 1$

(4) $cos^{-1}x=sin^{-1}\sqrt{1-x^2}$ if $0\le x\le 1$

50) (1) cot(corl(+600)) = -600

(2) cot(corl(I782)) = 1782

(3) $cot\left(cot^{-1}\left(\frac{-17}{9}\right)\right)=\frac{-17}{9}$

(4) $cot(cot^{-1}\left(\sqrt{3}\right)=\sqrt{3}$

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4. trignometry 2 mark

Date : 05-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 01:00:00 Hrs

Total Marks : 60

FOR ANSWERS JOIN WHATSAPP GROUP - 8056206308 [FEES RS.500 PER YEAR UNLIMITED PAPERS]

30 x 2 = 60

1) Find all the values of x such that

   -10$\pi \leq x \leq 10\pi$ and sin x=0

2) Find the period and amplitude of

   y=sin 7x

3) Find the value of

   $sin^{-1}\left(sin\left(\frac{2\pi}{3}\right)\right)$

4) For what value of x does sinx=sin−1x?

5) Find the domain of the following

   $sin^{-1}\left(\frac{x^2+1}{2x}\right)$

6) Find the value of $\sin^{-1}\left(sin\frac{5\pi}{9}cos\frac{\pi}{9}+cos\frac{5\pi}{9}sin\frac{\pi}{9}\right)$.

7) State the reason for $\cos^{-1}[cos(-\frac{\pi}{6})] \neq \frac{\pi}{6}$.

8) Find the principal value of $\cos\text{-}1(\frac{1}{2})$.

9) For what value of x , the inequality $\frac{\pi}{2} < cos^{-1}(3x-1) < \pi$

10) Find the domain of the following functions :

    $tan^{-1}(\sqrt{9-x^2})$

11) Find the value of

    $tan^{-1}(tan\frac{5\pi}{4})$

12) Find the value of

    $tan(tan^{-1}(\frac{7\pi}{4}))$

13) Find the principal value of

    $\sec^{-1}(\frac{2}{\sqrt{3}})$

14) Find the value of

    $tan^{-1}\left(\sqrt{3}\right)-sec^{-1}(-2)$

15) Find the value, if it exists. If not, give the reason for non-existence.

    $\sin^{-1}(\cos\pi)$

16) If $\tan^{-1}$ x+$\tan^{-1}$y+$\tan^{-1}$z=π , show that x+y+z+=xyz

17) Find the number of solution of the equation $\tan^{-1}$(x-1) $\tan^{-1}$x+$\tan^{-1}$(x+1)$\tan^{-1}$(3x)

18) Find all the values of x such that

    -8$\pi \leq x \leq$ -8π and sin x=-1

19) Find the period and amplitude of

    y=-sin$(\frac{1}{3}x)$

20) Find the value of

    $sin^{-1}\left(sin\left(\frac{5\pi}{4}\right)\right)$

21)

Find all values of x such that

-5$\pi \leq x \leq 5\pi$ and cos x -1

22) Find the value of

$\tan^{-1}(tan(-\frac{\pi}{6}))$

23) Find the value of

tan (tan^{-1}(-0.2021))

24) Find the value of

$cos\left(sin^{-1}\left(\frac{4}{5}\right) - tan^{-1}\left(\frac{3}{4}\right)\right)$

25) Find the principal value of

cot$^{-1}(\sqrt{3})$

26) Find the principal value of

cosec$^{-1(-\sqrt{2})}$

27) Find the value, if it exists. If not, give the reason for non-existence

$tan^{-1}\left(sin\left(-\frac{5\pi}{2}\right)\right)$

28) Find the value, if it exists. If not, give the reason for non-existence.

sin^{-1} [sin5]

29) Find the value of the expression in terms of x, with the help of a reference triangle.

cos (tan^{-1}(3x-1))

30) Find the value of the expression in terms of x, with the help of a reference triangle.

tan$\left(sin^{-1}\left(x + \frac{1}{2}\right)\right)$

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Inverse Trigonometric Functions TEST 1

12th Standard

Maths

Exam Time : 01:30:00 Hrs | Total Marks : 50

25 x 2 = 50

1) Find the principal value of $\sin^{-1}(2)$, if it exists.
2) Find all the values of x such that
   $-10\pi \leq x \leq 10\pi$ and sin x=0
3) For what value of x does $\sin x=\sin^{-1}x$?
4) Find all values of x such that
   $6\pi \leq x \leq 6\pi$ and cos x -0
5) Is $\cos^{-1}(-x)=\pi-\cos^{-1}(x)$ true? Justify your answer.
6) Find the value of
   $2cos^{-1}\left(\frac{1}{2}\right)+sin^{-1}\left(\frac{1}{2}\right)$
7) Find the value of
   $tan(tan^{-1}(\frac{7\pi}{4}))$
8) If $\cot^{-1}\frac{1}{7}=\theta$, find the value of $\cos\theta$.

9) Find the principal value of
   $\sec^{-1}(\frac{2}{\sqrt{3}})$
10) Prove that $\frac{\pi}{2} \leq sin^{-1}x+2cos^{-1}x \leq \frac{3\pi}{2}$.
11) Find the value of
    i) $sin\left[\frac{\pi}{3}-sin^2\left(-\frac{1}{2}\right)\right]$
12) Solve $\tan^{-1}\left(\frac{1-x}{1+x}\right)=\frac{1}{2}tan^{-1}$ x for x > 0
13) Find the value, if it exists. If not, give the reason for non-existence.
    $\sin^{-1}(\cos\pi)$
14) Prove that $\tan^{-1}$ x+$\tan^{-1}$ z=$\tan^{-1}\left[\frac{x+y+z-xyz}{1-xy-yz-zx}\right]$
15) Find all the values of x such that
    $-8\pi \leq x \leq -8\pi$ and sin x=-1
16) Find the period and amplitude of
    y=4sin(−2x)
17) Find all values of x such that
    $-5\pi \leq x \leq 5\pi$ and cos x -1
18) Find the value of
    $cos^{-1}\left(cos\frac{\pi}{7}cos\frac{\pi}{17}-sin\frac{\pi}{17}sin\frac{\pi}{17}\right)$.
19) Find the value of
    tan ($\tan^{-1}$(-0.2021))
20) Find the principal value of
    $\cot^{-1}(\sqrt{3})$

21) Simplify
$tan^{-1}\left(tan\left(\frac{3\pi}{4}\right)\right)$

22) Simplify
$\sin^{-1}[\sin 10]$

23) Find the principal value of $\sin^{-1}(-1)$.

24) Prove that $tan^{-1}\left(\frac{1}{7}\right)+tan^{-1}\left(\frac{1}{13}\right)=tan^{-1}\left(\frac{2}{9}\right)$

25) Prove that $2tan^{-1}\left(\frac{2}{3}\right)=tan^{-1}\left(\frac{12}{5}\right)$

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4. trignometry 3 mark

Date : 05-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 01:30:00 Hrs

Total Marks : 90

FOR ANSWERS JOIN WHATSAPP GROUP - 8056206308 [FEES RS.500 PER YEAR UNLIMITED PAPERS]

30 x 3 = 90

1) Find the domain of $\sin^{-1}(2-3x^2)$

2) Find the principal value of $\tan^{-1}(\sqrt{3})$

3) Find the value of $\tan^{-1}(-1)+\cos^{-1}(\frac{1}{2}) + sin^{-}1(-\frac{1}{2})$

4) Prove that $\tan(\sin^{-1}x)=\frac{x}{\sqrt{1-x^2}},\ -1 < x < 1.$

5) Prove that $\frac{\pi}{2} \le sin^{-1}x + 2cos^{-1}x \le \frac{3\pi}{2}$.

6) Find the value of

i) $sin\left[\frac{\pi}{3} - sin^2\left(-\frac{1}{2}\right)\right]$

7) Prove that $\tan\left(sin^{-1}x\right) = \frac{x}{\sqrt{1-x^2}} for\,|x| < 1$

8) Evaluate $sin\left[sin^{-1}\left(\frac{3}{5}\right) + sec^{-1}\left(\frac{5}{4}\right)\right]$

9) Prove that

$\tan^{-1}\frac{1}{2} + tan^{-1}\frac{1}{3} = \frac{\pi}{4}$

10) If $\cos^{-1}x+\cos^{-1}y+\cos^{-1}z$ = and 0< x,y,z< 1, show that $x^2+y^2+z^2+2xyz=1$

11) If $a_1, a_2, a_3, \ldots$ an is an arithmetic progression with common difference d, prove that tan

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $\left[tan^{-1}\left(\frac{d}{1+a_1a_2}\right) + tan^{-1}\left(\frac{d}{1+a_2a_3}\right) + \ldots . tan^{-1}\left(\frac{d}{1+a_na_{n-1}}\right)\right] = \frac{a_n-a_1}{1+a_1a_n}$

12) Solve $\tan^{-1}\left(\frac{1-x}{1+x}\right) = \frac{1}{2}tan^{-1}$ x for x > 0

13) Solve sin-1 x > $\cos^{-1}$x

14) Show that $cot(sin^{-1}x) = \frac{\sqrt{1-x^2}}{x} - 1 \le x \le$ and x $\neq$ 0

15) Solve $\tan^{-1}$ 2x+$\tan^{-1}$ 3x=$\frac{\pi}{4}$, if $6x^2$< 1

16) Solve $tan^{-1}\left(\frac{x-1}{x-2}\right) + tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$

17) Solve $cos\left(sin^{-1}\left(\frac{x}{\sqrt{1+x^2}}\right)\right) = sin\left\{cot^{-1}\left(\frac{3}{4}\right)\right\}$

18) Simplify

$sec^{-1}\left(sec\left(\frac{5\pi}{3}\right)\right)$

19) Find the value of

$$\cos\left[\frac{1}{2}\cos^{-1}\left(\frac{1}{8}\right)\right]$$

20) Find the value of

$$\tan\left[\frac{1}{2}\sin^{-1}\left(\frac{2a}{1+a^2}\right)+\frac{1}{2}\cos^{-1}\left(\frac{1-a^2}{1+a^2}\right)\right]$$

21) Prove that

$$2\tan^{-1}\frac{1}{2}+\tan^{-1}\frac{1}{7}=\tan^{-1}\frac{31}{17}$$

22) Prove that $\cos^{-1}\left(\frac{4}{5}\right)+\tan^{-1}\left(\frac{3}{5}\right)=\tan^{-1}\left(\frac{27}{11}\right)$

23) Evaluate $\cos\left[\sin^{-1}\frac{3}{5}+\sin^{-1}\frac{5}{13}\right]$

24) Prove that $\tan^{-1}\left(\frac{m}{n}\right)-\tan^{-1}\left(\frac{m-n}{m+n}\right)=\frac{\pi}{4}$

25) Solve: $\tan^{-1}\left(\frac{x-1}{x-2}\right)+\tan^{-1}\left(\frac{x+1}{x+2}\right)=\frac{\pi}{4}$

26) Solve $\tan^{-1}\left(\frac{2x}{1-x^2}\right)+\cot^{-1}\left(\frac{1-x^2}{2x}\right)=\frac{\pi}{3}, x>0$

27) If $\sin\left(\sin^{-1}\frac{1}{5}+\cos^{-1}x\right)=1$ then find the value ofx.

28) Prove that $\tan^{-1}\sqrt{x}=\frac{1}{2}\cos^{-1}=\frac{1}{2}\cos^{-1}\left(\frac{1-x}{1+x}\right), x\epsilon|0,\ 1|$

29) Find the real solutions of the equation

$$\tan^{-1}\sqrt{x(x+1)}+\sin^{-1}\sqrt{x^2+x+1}=\frac{\pi}{2}$$

30) Solve: $\cos(\tan^{-1}x)=\sin\left(\cot^{-1}\frac{3}{4}\right)$

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Inverse Trigonometric Functions TEST 5

12th Standard

Maths

Exam Time : 02:00:00 Hrs | Total Marks : 75

25 x 3 = 75

1) Sketch the graph of y= $\sin(\frac{1}{3}x)$ for $0 \leq x < 6\pi$.

2) Find the domain of $\cos^{-1}(\frac{2+sinx}{3})$

3) For what value of x , the inequality $\frac{\pi}{2} < cos^{-1}(3x-1) < \pi$

4) Find the principal value of $\tan^{-1}(\sqrt{3}\ )$

5) Find the value of $\tan^{-1}(-1\ )+\cos^{-1}(\frac{1}{2}) + sin^{-}1(-\frac{1}{2})$

6) Evaluate $sin\left[sin^{-1}\left(\frac{3}{5}\right) + sec^{-1}\left(\frac{5}{4}\right)\right]$

7) Solve $\tan^{-1} 2x+\tan^{-1} 3x=\frac{\pi}{4}$, if $6x^2< 1$

8) Find the value of
$sin^{-1}\left(cos\left(sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)\right)$

9) Simplify: $tan^{-1}\frac{x}{y} - tan^{-1}\frac{x-y}{x+y}$

10) Solve
$sin^{-1}\frac{5}{x} + sin^{-1}\frac{12}{x} = \frac{\pi}{2}$

11) Find the domain of the following
$g(x)=2\sin^{-1}(2x-1)-\frac{\pi}{4}$

12) Find the value of
$cos^{-1}\left(cos\left(\frac{4\pi}{3}\right)\right) + cos^{-1}\left(cos\left(\frac{5\pi}{4}\right)\right)$.

13) Find the domain of the following functions
$\frac{1}{2}tan^{-1}(1-x^2) - \frac{\pi}{4}$

14) Find the value of
$cos\left(sin^{-1}\left(\frac{4}{5}\right) - tan^{-1}\left(\frac{3}{4}\right)\right)$

15) Find the value of
$cot^{-1}(1) + sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) - sec^{-1}(-\sqrt{2})$

16) Find the value of the expression in terms of x, with the help of a reference triangle.
$\tan\left(sin^{-1}\left(x+\frac{1}{2}\right)\right)$

17) Find the value of
$tan\left(sin^{-1}\frac{3}{5} + cot^{-1}\frac{3}{2}\right)$

18) Solve:
$2tan^{-1}x = cos^{-1}\frac{1-a^2}{1+a^2} - cos^{-1}\frac{1-b^2}{1+b^2}, a>0, b>0$

19) Solve
$cot^{-1}x - xot^{-1}(x+2) = \frac{\pi}{12}, x>0$

20) Prove that
$2\tan^{-1}\frac{1}{2} + tan^{-1}\frac{1}{7} = tan^{-1}\frac{31}{17}$

21) Evaluate $cos\left[sin^{-1}\frac{3}{5} + sin^{-1}\frac{5}{13}\right]$

22) Prove that $tan^{-1}\left(\frac{m}{n}\right) - tan^{-1}\left(\frac{m-n}{m+n}\right) = \frac{\pi}{4}$

23) Solve: $tan^{-1}\left(\frac{x-1}{x-2}\right) + tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$

24) If $sin\left(sin^{-1}\frac{1}{5} + cos^{-1}x\right) = 1$ then find the value ofx.

25) Solve: $\cos(\tan^{-1}x) = sin\left(cot^{-1}\frac{3}{4}\right)$

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RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308

4. trignometry 5 mark

Date : 05-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 01:00:00 Hrs

Total Marks : 40

FOR ANSWERS JOIN WHATSAPP GROUP - 8056206308 [FEES RS.500 PER YEAR UNLIMITED PAPERS]

8 x 5 = 40

1) Find (i) $\cos^{-1}\left(-\frac{1}{\sqrt{2}}\right)$

ii) $\cos^{-1}\left(cos\left(-\frac{\pi}{3}\right)\right)$

iii) $\cos^{-1}\left(cos\left(-\frac{7\pi}{6}\right)\right)$

2) Find the domain of $\cos^{-1}\left(\frac{2+sinx}{3}\right)$

3) Show that $\cot^{-1}\left(\frac{1}{\sqrt{x^2-1}}\right) = sec^{-1}x, |x| > 1$

4) Find the domain of the following functions

(i) $f(x) = \sin^{-1}(2x - 3)$

(ii) $f(x) = \sin^{-1}x + \cos x$

5) Write thefunction $f(x) = tan^{-1}\sqrt{\frac{a-x}{a+x}}\ -a < x < a$ in the simplest form

6) Simplify $sin^{-1}\left(\frac{sinx + cosx}{\sqrt{2}}\right), \frac{\pi}{4} < x < \frac{\pi}{4}$

7) If $tan^{-1}\left(\frac{\sqrt{1+x^2}-\sqrt{1-x^2}}{\sqrt{1+x^2}+\sqrt{1-x^2}}\right) = a$ than prove that x^2=sin2a

8) Provethat $tan^{-1}\left(\frac{1-x}{1+x}\right) - tan^{-1}\left(\frac{1-y}{1+y}\right) = sin^{-1}\left(\frac{y-x}{\sqrt{1+x^2}.\sqrt{1+y^2}}\right)$

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RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308

INVERSE TRIGNOMETRY FULL TEST

Date : 05-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 02:30:00 Hrs

Total Marks : 90

FOR ANSWERS WHATSAPP [FEES RS.500 PER YEAR]

10 x 1 = 10

1) If $\sin^{-1} x+\sin^{-1} y=\frac{2\pi}{3}$; then $\cos^{-1}x+\cos^{-1} y$ is equal to

(a) $\frac{2\pi}{3}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{6}$ (d) π

2) $sin^{-1}\left(tan\frac{\pi}{4}\right)-sin^{-1}\left(\sqrt{\frac{3}{x}}\right)=\frac{\pi}{6}$ .Then x is a root of the equation

(a) $x^2-x-6=0$ (b) $x^2-x-12=0$ (c) $x^2+x-12=0$ (d) $x^2+x-6=0$

3) $\sin^{-1}(2\cos^2 x-1)+\cos^{-1}(1-2\sin^2 x)=$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{6}$

4) The equation $\tan^{-1} x-\cot^{-1} x=\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$ has

(a) no solution (b) unique solution (c) two solutions (d) infinite number of solutions

5) If $\sin^{-1}\frac{x}{5}+cosec^{-1}\frac{5}{4}=\frac{\pi}{2}$, then the value of x is

(a) 4 (b) 5 (c) 2 (d) 3

6) If $sin^{-1}x-cos^{-1}x=\frac{\pi}{6}$ then

(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{-1}{2}$ (d) none of these

7) The number of solutions of the equation $tan^{-1}2x+tan^{-1}3x=\frac{\pi}{4}$

(a) 2 (b) 3 (c) 1 (d) none

8) The number of real solutions of the equation $\sqrt{1+cos2x}=2sin^{-1}(sinx),\ -\pi<x<\pi$ is

(a) 0 (b) 1 (c) 2 (d) infinte

9) ·If $\alpha=tan^{-1}\left(\frac{\sqrt{3}}{2y-x}\right),\beta=tan^{-1}\left(\frac{2x-y}{\sqrt{3y}}\right)$ then $\alpha-\beta$

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{2}$ (d) $\frac{-\pi}{3}$

10) If $\tan^{-1}(3)+\tan^{-1}(x)=\tan^{-1}(8)$then x=

(a) 5 (b) $\frac{1}{5}$ (c) $\frac{5}{14}$ (d) $\frac{14}{5}$

10 x 2 = 20

11)

Find the period and amplitude of

y=sin 7x

12) Find the value of

$$sin^{-1}\left(sin\left(\frac{2\pi}{3}\right)\right)$$

13) Find the value of $\sin^{-1}\left(sin\frac{5\pi}{9}cos\frac{\pi}{9}+cos\frac{5\pi}{9}sin\frac{\pi}{9}\right)$.

14) Find the value of

$$2cos^{-1}\left(\frac{1}{2}\right)+sin^{-1}\left(\frac{1}{2}\right)$$

15) Find the domain of

$f(x)=\sin\text{-}1\left(\frac{|x|-2}{3}\right)+cos^{-}1\left(\frac{1-|x|}{4}\right)$

16) Find the value of

$$cos\left(cos^{-1}\left(\frac{4}{5}\right)+sin^{-1}\left(\frac{4}{5}\right)\right)$$

17) Find the value of

$$tan(tan^{-1}(\frac{7\pi}{4}))$$

18) Find the value of

$$tan^{-1}\left(\sqrt{3}\right)-sec^{-1}(-2)$$

19) Find the value, if it exists. If not, give the reason for non-existence.

$\sin^{-1}(\cos\pi)$

20) If $\tan^{-1}x+\tan^{-1}y+\tan^{-1}z=\pi$, show that x+y+z+=xyz

10 x 3 = 30

21) Find the value of $\tan^{-1}(-1)+\cos^{-1}(\frac{1}{2})+sin^{-}1(-\frac{1}{2})$

22) Prove that $\frac{\pi}{2}\leq sin^{-1}x+2cos^{-1}x\leq\frac{3\pi}{2}$.

23) Simplify

$$cos^{-1}\left(cos\left(\frac{13\pi}{3}\right)\right)$$

24) Prove that

$$\tan^{-1}\frac{1}{2}+tan^{-}1\frac{1}{3}=\frac{\pi}{4}$$

25) If $\cos^{-1}x+\cos^{-1}y+\cos^{-1}z$ = and 0< x,y,z< 1, show that $x^2+y^2+z^2+2xyz=1$

26) Find the principal value of

$$Sin^{-1}\left(sin\left(\frac{5\pi}{6}\right)\right)$$

27) Prove that

$$2\tan^{-1}\frac{1}{2}+tan^{-}1\frac{1}{7}=tan^{-}1\frac{31}{17}$$

28) Evaluate $cos\left[sin^{-1}\frac{3}{5}+sin^{-1}\frac{5}{13}\right]$

29)

Prove that $tan^{-1}\left(\frac{m}{n}\right) - tan^{-1}\left(\frac{m-n}{m+n}\right) = \frac{\pi}{4}$

30) Solve: $\cos(\tan^{-1}x) = sin\left(cot^{-1}\frac{3}{4}\right)$

6 x 5 = 30

31) Find (i) $\cos^{-1}(-\frac{1}{\sqrt{2}})$

ii) $\cos^{-1}(cos(-\frac{\pi}{3}))$

iii) $\cos^{-1}(cos(-\frac{7\pi}{6}))$

32) Find the domain of $\cos^{-1}(\frac{2+sinx}{3})$

33) Find the domain of the following functions

(i) $f(x) = \sin^{-1}(2x - 3)$

(ii) $f(x) = \sin^{-1}x + \cos x$

34) Simplify $sin^{-1}\left(\frac{sinx + cosx}{\sqrt{2}}\right), \frac{\pi}{4} < x < \frac{\pi}{4}$

35) If $tan^{-1}\left(\frac{\sqrt{1+x^2}-\sqrt{1-x^2}}{\sqrt{1+x^2}+\sqrt{1-x^2}}\right) = a$ than prove that $x^2=\sin 2a$

36) Provethat $tan^{-1}\left(\frac{1-x}{1+x}\right) - tan^{-1}\left(\frac{1-y}{1+y}\right) = sin^{-1}\left(\frac{y-x}{\sqrt{1+x^2}.\sqrt{1+y^2}}\right)$

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RAVI MATHS TUITION CENTER, NEAR VILLIVAKKAM RLY STATION, CHENNAI – 82.
WHATSAPP - 8056206308

Inverse Trigonometric Functions TEST 8

12th Standard

Maths

Exam Time : 02:30:00 Hrs | Total Marks : 100

20 x 1 = 20

1) The value of $\sin^{-1}(\cos x), 0 \le x \le \pi$ is

(a) $\pi - x$ (b) $x - \frac{\pi}{2}$ (c) $\frac{\pi}{2} - x$ (d) $\pi - x$

2) $sin^{-1}\frac{3}{5} - cos^{-1}\frac{12}{13} + sec^{-1}\frac{5}{3} - cosec^{1-}\frac{13}{2}$ is equal to

(a) 2π (b) π (c) 0 (d) $\tan_{-1}\frac{12}{65}$

3) $\sin^{-1}(\cos x) = \frac{\pi}{2} - x$ is valid for

(a) $-\pi \le x \le 0$ (b) $0\pi \le x \le 0$ (c) $-\frac{\pi}{2} \le x \le \frac{\pi}{2}$ (d) $-\frac{\pi}{4} \le x \le \frac{3\pi}{4}$

4) If $\cot -1x = \frac{2\pi}{5}$ for some $x \in R$, the value of $\tan^{-1} x$ is

(a) $\frac{-\pi}{10}$ (b) $\frac{\pi}{5}$ (c) $\frac{\pi}{10}$ (d) $-\frac{\pi}{5}$

5) If $x=\frac{1}{5}$, the valur of $\cos(\cos^{-1}x+2\sin^{-1}x)$ is

(a) $-\sqrt{\frac{24}{25}}$ (b) $\sqrt{\frac{24}{25}}$ (c) $\frac{1}{5}$ (d) $-\frac{1}{5}$

6) If the function $f(x)\sin^{-1}(x^2-3)$, then x belongs to

(a) [-1,1] (b) $[\sqrt{2},2]$ (c) $\left[-2, -\sqrt{2}\right] \cup \left[\sqrt{2}, 2\right]$ (d) $\left[-2, -\sqrt{2}\right] \cap \left[\sqrt{2}, 2\right]$

7) $sin^{-1}\left(tan\frac{\pi}{4}\right) - sin^{-1}\left(\sqrt{\frac{3}{x}}\right) = \frac{\pi}{6}$. Then x is a root of the equation

(a) $x^2-x-6=0$ (b) $x^2-x-12=0$ (c) $x^2+x-12=0$ (d) $x^2+x-6=0$

8) If $cot^{-1}\left(\sqrt{sin\alpha}\right) + tan^{-1}\left(\sqrt{sin\alpha}\right) = u$, then cos2u is equal to

(a) $\tan^2\alpha$ (b) 0 (c) -1 (d) $\tan 2\alpha$

9) The equation $\tan^{-1} x - \cot^{-1} x = \tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$ has

(a) no solution (b) unique solution (c) two solutions (d) infinite number of solutions

10) If $\sin^{-1}\frac{x}{5} + cosec^{-1}\frac{5}{4} = \frac{\pi}{2}$, then the value of x is

(a) 4 (b) 5 (c) 2 (d) 3

11) If $tan^{-1}\left\{\frac{\sqrt{1+x^2}-\sqrt{1-x^2}}{\sqrt{1+x^2}+\sqrt{1-x^2}}\right\} = \alpha$ then x^2 =

(a) $sin2\alpha$ (b) $sin\alpha$ (c) $cos2\alpha$ (d) $cos\alpha$

12) The number of solutions of the equation $tan^{-1}2x + tan^{-1}3x = \frac{\pi}{4}$

(a) 2 (b) 3 (c) 1 (d) none

13) The number of real solutions of the equation $\sqrt{1 + cos2x} = 2sin^{-1}(sinx),\ -\pi < x < \pi$ is

(a) 0 (b) 1 (c) 2 (d) infinte

14) $tan^{-1}\left(\frac{1}{4}\right) + tan^{-1}\left(\frac{2}{11}\right)$ =

(a) 0 (b) $\frac{1}{2}$ (c) -1 (d) none

15) The value of $cos^{-1}\left(\frac{cos5\pi}{3}\right) + sin^{-1}\left(\frac{sin5\pi}{3}\right)$ is

(a) $\frac{\pi}{2}$ (b) $\frac{5\pi}{3}$ (c) $\frac{10\pi}{3}$ (d) 0

16) If $4cos^{-1}x + sin^{-1}x = \pi$ then x is

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

17) If $cos^{-1}x > x > sin^{-1}x$ then

(a) $\frac{1}{\sqrt{2}} < x \leq 1$ (b) $0 \leq x < \frac{1}{\sqrt{2}}$ (c) $-1 \leq x < \frac{1}{\sqrt{2}}$ (d) x > 0

18) $cot\left(\frac{\pi}{4} - cot^{-1}3\right)$

(a) 7 (b) 6 (c) 5 (d) none

19) The domain of $cos^{-1}(x^2 - 4)$ is_____

(a) [3, 5] (b) [-1, 1] (c) $\left[-\sqrt{5}, -\sqrt{3}\right] \cup \left[\sqrt{3}, \sqrt{5}\right]$ (d) [0, 1]

20) The value of $sin(2(tan^{-1}\ 0.75)$ is_____

(a) 0.75 (b) 1.5 (c) 0.96 (d) $sin^{-1}(1.5)$

10 x 2 = 20

21) Find the principal value of $sin^{-1}\left(-\frac{1}{2}\right)$(in radians and degrees).

22) Find the period and amplitude of
y=sin 7x

23) Is $cos^{-1}(-x)=\pi-cos^{-1}(x)$ true? Justify your answer.

24) Find the value of $\sec^{-1}\left(-\frac{2\sqrt{3}}{3}\right)$

25) Prove that $\frac{\pi}{2} \leq sin^{-1}x + 2cos^{-1}x \leq \frac{3\pi}{2}$.

26) Show that $cot(sin^{-1}x) = \frac{\sqrt{1-x^2}}{x}$ $-1 \leq x \leq$ and x $\neq$ 0

27) Find all the values of x such that
$-8\pi \leq x \leq -8\pi$ and sin x=-1

28) Find the value of

$$cos^{-1}\left(\frac{1}{2}\right) + sin^{-1}(-1)$$

29) Find the principal value of
$\cot^{-1}(\sqrt{3})$

30) Find the principal value of

$$Sin^{-1}\left(sin\left(\frac{5\pi}{6}\right)\right)$$

10 x 3 = 30

31) Find the domain of $\sin^{-1}(2-3x^2)$

32) Find the domain of
$f(x)=\sin^{-1}\left(\frac{|x|-2}{3}\right) + cos^{-1}\left(\frac{1-|x|}{4}\right)$

33) Find the value of $\tan^{-1}(-1) + \cos^{-1}\left(\frac{1}{2}\right) + sin^{-1}\left(-\frac{1}{2}\right)$

34) Prove that
$\tan^{-1}\frac{1}{2} + tan^{-1}\frac{1}{3} = \frac{\pi}{4}$

35) Find the value of

$$sin^{-1}\left(cos\left(sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)\right)$$

36) Find the domain of the following
$g(x)=2\sin^{-1}(2x-1)-\frac{\pi}{4}$

37) Find the value of

$$cos\left(sin^{-1}\left(\frac{4}{5}\right) - tan^{-1}\left(\frac{3}{4}\right)\right)$$

38) Find the value of

$$cot\left(sin^{-1}\frac{3}{5} + sin^{-1}\frac{4}{5}\right)$$

39) Solve

$cot^{-1}x - xot^{-1}(x+2) = \frac{\pi}{12}, x > 0$

40)

Prove that $cos^{-1}\left(\frac{4}{5}\right) + tan^{-1}\left(\frac{3}{5}\right) = tan^{-1}\left(\frac{27}{11}\right)$

6 x 5 = 30

41) Find (i) $\cos^{-1}\left(-\frac{1}{\sqrt{2}}\right)$

ii) $\cos^{-1}(cos(-\frac{\pi}{3}))$

iii) $\cos^{-1}(cos(-\frac{7\pi}{6}))$

42) If a_1, a_2, a_3, ... an is an arithmetic progression with common difference d, prove that tan

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $\left[tan^{-1}\left(\frac{d}{1+a_1a_2}\right) + tan^{-1}\left(\frac{d}{1+a_2a_3}\right) + \ldots . tan^{-1}\left(\frac{d}{1+a_na_{n-1}}\right)\right] = \frac{a_n - a_1}{1+a_1a_n}$

43)

Solve $tan^{-1}\left(\frac{x-1}{x-2}\right) + tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$

44)

Solve $cos\left(sin^{-1}\left(\frac{x}{\sqrt{1+x^2}}\right)\right) = sin\left\{cot^{-1}\left(\frac{3}{4}\right)\right\}$

45)

If $tan^{-1}\left(\frac{\sqrt{1+x^2}-\sqrt{1-x^2}}{\sqrt{1+x^2}+\sqrt{1-x^2}}\right) = a$ than prove that x^2=sin2a

46)

Provethat $tan^{-1}\left(\frac{1-x}{1+x}\right) - tan^{-1}\left(\frac{1-y}{1+y}\right) = sin^{-1}\left(\frac{y-x}{\sqrt{1+x^2}.\sqrt{1+y^2}}\right)$

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RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308

INVERSE TRIGNOMETRY FULL TEST

12th Standard

Maths

Reg.No. : | | | | | | |

Exam Time : 03:00:00 Hrs Total Marks : 90

ANSWER ALL 20 x 1 = 20

1) If $\sin^{-1} x+\sin^{-1} y=\frac{2\pi}{3}$; then $\cos^{-1}x+\cos^{-1} y$ is equal to

(a) $\frac{2\pi}{3}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{6}$ (d) π

2) $sin^{-1}\left(tan\frac{\pi}{4}\right)-sin^{-1}\left(\sqrt{\frac{3}{x}}\right)=\frac{\pi}{6}$ .Then x is a root of the equation

(a) $x^2-x-6=0$ (b) $x^2-x-12=0$ (c) $x^2+x-12=0$ (d) $x^2+x-6=0$

3) $\sin^{-1}(2\cos^2 x-1)+\cos^{-1}(1-2\sin^2 x)=$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{6}$

4) The equation $\tan^{-1} x-\cot^{-1} x=\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$ has

(a) no solution (b) unique solution (c) two solutions (d) infinite number of solutions

5) If $\sin^{-1}\frac{x}{5}+cosec^{-1}\frac{5}{4}=\frac{\pi}{2}$, then the value of x is

(a) 4 (b) 5 (c) 2 (d) 3

6) If $x=\frac{1}{5}$, the valur of $\cos(\cos^{-1}x+2\sin^{-1}x)$ is

(a) $-\sqrt{\frac{24}{25}}$ (b) $\sqrt{\frac{24}{25}}$ (c) $\frac{1}{5}$ (d) $-\frac{1}{5}$

7) $tan^{-1}\left(\frac{1}{4}\right)+tan^{-1}\left(\frac{2}{3}\right)$ is equal to

(a) $\frac{1}{2}cos^{-1}\left(\frac{3}{5}\right)$ (b) $\frac{1}{2}sin^{-1}\left(\frac{3}{5}\right)$ (c) $\frac{1}{2}tan^{-1}\left(\frac{3}{5}\right)$ (d) $tan^{-1}\left(\frac{1}{2}\right)$

8) If the function $f(x)\sin^{-1}(x^2-3)$, then x belongs to

(a) [-1,1] (b) $[\sqrt{2},2]$ (c) $\left[-2,-\sqrt{2}\right]\cup\left[\sqrt{2},2\right]$ (d) $\left[-2,-\sqrt{2}\right]\cap\left[\sqrt{2},2\right]$

9) If $\cot^{-1} 2$ and $\cot^{-1} 3$ are two angles of a triangle, then the third angle is

(a) $\frac{\pi}{4}$ (b) $\frac{3\pi}{4}$ (c) $\frac{\pi}{6}$ (d) $\frac{\pi}{3}$

10) If $cot^{-1}\left(\sqrt{sin\alpha}\right)+tan^{-1}\left(\sqrt{sin\alpha}\right)=u$, then cos2u is equal to

(a) $\tan^2\alpha$ (b) 0 (c) -1 (d) $\tan 2\alpha$

11) If $|x|\leq 1$, then $2\tan^{-1} x-\sin^{-1}\frac{2x}{1+x^2}$ is equal to

(a) $\tan^{-1}x$ (b) $\sin^{-1}x$ (c) 0 (d) π

12) If $\sin^{-1} x+\cot^{-1}\left(\frac{1}{2}\right)=\frac{\pi}{2}$, then x is equal to

(a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{5}}$ (c) $\frac{2}{\sqrt{5}}$ (d) $\frac{\sqrt{3}}{2}$

13) $\sin(\tan^{-1}x)$, $|x|<1$ ia equal to

(a) $\frac{x}{\sqrt{1-x^2}}$ (b) $\frac{1}{\sqrt{1-x^2}}$ (c) $\frac{1}{\sqrt{1+x^2}}$ (d) $\frac{x}{\sqrt{1+x^2}}$

14) The value of $\sin^{-1}(\cos x), 0\leq x\leq\pi$ is

(a) $\pi-x$ (b) $x-\frac{\pi}{2}$ (c) $\frac{\pi}{2}-x$ (d) $\pi-x$

15) $sin^{-1}\frac{3}{5}-cos^{-1}\frac{12}{13}+sec^{-1}\frac{5}{3}-cosec^{1-}\frac{13}{2}$ is equal to

(a) 2π (b) π (c) 0 (d) $\tan^{-1}\frac{12}{65}$

16) If $\sin^{-}1x = 2\sin^{-1}\alpha$ has a solution, then

(a) $|\alpha|\leq\frac{1}{\sqrt{2}}$ (b) $|\alpha|\geq\frac{1}{\sqrt{2}}$ (c) $|\alpha|<\frac{1}{\sqrt{2}}$ (d) $|\alpha|>\frac{1}{\sqrt{2}}$

17) $\sin^{-1}(\cos x)=\frac{\pi}{2}-x$ is valid for

(a) $-\pi \leq x \leq 0$ (b) $0\pi \leq x \leq 0$ (c) $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$ (d) $-\frac{\pi}{4} \leq x \leq \frac{3\pi}{4}$

18) If $\sin^{-1} x+\sin^{-1} y+\sin^{-1} z=\frac{3\pi}{2}$, the value of $x^{2017}+y^{2018}+z^{2019}-\frac{9}{x^{101}+y^{101}+z^{101}}$ is

(a) 0 (b) 1 (c) 2 (d) 3

19) If $\cot -1x=\frac{2\pi}{5}$ for some x∈ R, the value of $\tan^{-1} x$ is

(a) $\frac{-\pi}{10}$ (b) $\frac{\pi}{5}$ (c) $\frac{\pi}{10}$ (d) $-\frac{\pi}{5}$

20) The domain of the function defined by $f(x)=\sin^{-1}\sqrt{x-1}$ is

(a) [1,2] (b) [-1,1] (c) [0,1] (d) [-1,0]

ANSWER ANY 7 7 x 2 = 14

21) Find the period and amplitude of

y=sin 7x

22) Find the value of $\sin^{-1}\left(sin\frac{5\pi}{9}cos\frac{\pi}{9}+cos\frac{5\pi}{9}sin\frac{\pi}{9}\right)$.

23) Find the value of

$2cos^{-1}\left(\frac{1}{2}\right)+sin^{-1}\left(\frac{1}{2}\right)$

24) Find the domain of

f(x)=sin-1 $\left(\frac{|x|-2}{3}\right)+cos^{-}1\left(\frac{1-|x|}{4}\right)$

25) Find the value of

$cos\left(cos^{-1}\left(\frac{4}{5}\right)+sin^{-1}\left(\frac{4}{5}\right)\right)$

26) Find the value of

$tan(tan^{-1}(\frac{7\pi}{4}))$

27) Find the value of

$tan^{-1}\left(\sqrt{3}\right)-sec^{-1}(-2)$

28) Find the value, if it exists. If not, give the reason for non-existence.

$\sin^{-1}(\cos\pi)$

29) If $\tan^{-1} x+\tan^{-1}y+\tan^{-1}z=\pi$, show that x+y+z+=xyz

30) Prove that $\tan\left(sin^{-1}x\right)=\frac{x}{\sqrt{1-x^2}}\,for|x|<1$

ANSWER ANY 7 7 x 3 = 21

31) Find the value of $\tan^{-1}(-1)+\cos^{-1}\left(\frac{1}{2}\right)+sin^{-}1\left(-\frac{1}{2}\right)$

32) Prove that $\frac{\pi}{2} \leq sin^{-1}x+2cos^{-1}x \leq \frac{3\pi}{2}$.

33) Simplify

$cos^{-1}\left(cos\left(\frac{13\pi}{3}\right)\right)$

34) Prove that

$\tan^{-1}\frac{1}{2}+tan^{-1}\frac{1}{3}=\frac{\pi}{4}$

35) If $\cos^{-1}x+\cos^{-1}y+\cos^{-1}$ z = and 0< x,y,z< 1, show that $x^2+y^2+z^2+2xyz=1$

36) Find the principal value of

$Sin^{-1}\left(sin\left(\frac{5\pi}{6}\right)\right)$

37) Prove that

$2\tan^{-1}\frac{1}{2}+tan^{-1}\frac{1}{7}=tan^{-1}\frac{31}{17}$

38) Evaluate $cos\left[sin^{-1}\frac{3}{5}+sin^{-1}\frac{5}{13}\right]$

39) Prove that

$$tan\quad(\frac{m}{n}) - tan\quad(\frac{m-n}{m+n}) = \frac{\pi}{4}$$

40) Solve: $\cos(\tan^{-1}x) = sin\,(cot^{-1}\frac{3}{4})$

ANSWER ANY 7 7 x 5 = 35

41) Find (i) $\cos^{-1}(-\frac{1}{\sqrt{2}})$

ii) $\cos^{-1}(cos(-\frac{\pi}{3}))$

iii) $\cos^{-1}(cos(-\frac{7\pi}{6}))$

42) Find the domain of $\cos^{-1}(\frac{2+sinx}{3})$

43) Find the domain of the following functions

(i) $f(x) = \sin^{-1}(2x - 3)$

(ii) $f(x) = \sin^{-1}x + \cos x$

44) Simplify $sin^{-1}(\frac{sinx + cosx}{\sqrt{2}}), \frac{\pi}{4} < x < \frac{\pi}{4}$

45) If $tan^{-1}(\frac{\sqrt{1+x^2} - \sqrt{1-x^2}}{\sqrt{1+x^2} + \sqrt{1-x^2}}) = a$ than prove that $x^2=\sin 2a$

46) Provethat $tan^{-1}(\frac{1-x}{1+x}) - tan^{-1}(\frac{1-y}{1+y}) = sin^{-1}(\frac{y-x}{\sqrt{1+x^2}.\sqrt{1+y^2}})$

47) If $a_1, a_2, a_3, \ldots$ an is an arithmetic progression with common difference d, prove that

$\tan x = \frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $\left[tan^{-1}\left(\frac{d}{1+a_1a_2}\right) + tan^{-1}\left(\frac{d}{1+a_2a_3}\right) + \ldots . tan^{-1}\left(\frac{d}{1+a_na_{n-1}}\right)\right] = \frac{a_n-a_1}{1+a_1a_n}$

48) Solve $tan^{-1}\left(\frac{x-1}{x-2}\right) + tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$

49) Solve $cos\,(sin^{-1}(\frac{x}{\sqrt{1+x^2}})) = sin\left\{cot^{-1}\left(\frac{3}{4}\right)\right\}$

50) Write thefunction $f(x) = tan^{-1}\tilde{A}\ \sqrt{\frac{a-x}{a+x}}\ -a < x < a$ in the simplest form

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