

India's Number 1 Education App

MATHS

BOOKS - CENGAGE MATHS (ENGLISH)

GRAPH OF INVERSE TRIGONOMETRIC FUNCTIONS

Illustration

1. Solve $\sin^{-1} x \leq \cos^{-1} x$ graphically. Check the differentiability of f (x)

=min. $\{\sin^{-1} x \le \cos^{-1} x\}$. Also find the range of y = f(x)



2. Evlute $\left[\lim t_{x\to 0} \frac{\tan^{-1}x}{x}\right]$, where $[\,\cdot\,]$ re[resemts the greatest integer function.



3. Find the values of a for whch $\sin^{\cdot}(-1)x = |x-a|$ will have at least one solution.



4. Draw the graph of $y = \sin^{-1} 2x$ and $y = \sin^{-1} (x/2)$ and compare with $y = \sin^{-1} x$.



5. Draw the graphs of $y=\sin^{-1}\{x\}$, where $\{\,\cdot\,\}$ resresent the fractional part function.



6. Draw the graph of $y = \sin^{-1} x + \cos^{-1} x$.



7. Draw the graph of
$$y = \sec^{-1} x + \cos ec^{-1} x$$



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8. Draw the graph of $y = \cos^2 x$.

$$y = \sin^{-1} x.$$

10. Draw the graph of
$$f(x) = \lceil \tan^{-1} x \rceil$$
, where $\lceil \cdot \rceil$ represents the greatest integer function.

9. Draw the graph of $y=\sin^{-1}x^3$ and compare wire the graph of

11. Draw the graph of $y=\sin^{-1}(\log_e x)$. Also find the point of inflection.



12. Draw the graph of the function $y=f(x)= an^{-1}igg(rac{1-x^2}{1+x^2}igg).$



13. Draw the graph of $y=\sin(\sin^{-1}x)$ or $y=\cos(\cos^{-1}x)$



14. Draw the graph of $y = \tan(\tan^{-1} x)$ or $y = \cot(\cot^{-1} x)$



15. Draw the graph of $y = \sin^{-1}(\sin x)$



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16. Draw the graph of $y = -\cos^{-1}(\cos x)$.



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17. Let $f\colon [0,4\pi] o [0,\pi]$ be defined by $f(x) = \cos^{-1}(\cos x)$. The number of points $x \in [0,4\pi]$ 4satisfying the equation $f(x) = \frac{10-x}{10}$ is



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18. Draw the graph of $y = \tan^{-1}(\tan x)$



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19. Draw the graph of $y = \cot^{-1}(\cot x)$



20. Draw in graph of $y = \csc^{-1}(\csc x)$.



21. Draw the graph of $f(x) = \sec^{-1}(\sec x)$



22. Fide the area bounded by $y=\sin^{-1}(\sin x)$ and the x-axis for $x\in[0,100\pi].$



23. Find the sum of roots the equation $\cos^{-1}(\cos x) = [x], [\cdot]$ denotes the greatest integer funtions.



24. Draw the graph of $f(x)\sin^{-1}|\sin x|+\cos^{-1}(\cos x)$. Find the range of the function. Find the points of non-differentiability. Also find the value of $\int_0^{10\pi} \left[\sin^{-1}|\sin x|+\cos^{-1}(\cos x)\right] \mathrm{d}x$



25. Draw the graph of $y=2x^2-1$ and heance the graph of f(x) $=\cos^{-1}2x^2-1$).



27. Draw the graph of
$$y=\sin^{-1}\!\left(rac{2x}{1+x^2}
ight)$$



28. Draw the graph of $y = \cos^{-1} \left(\frac{1 - x^2}{1 + x^2} \right)$ **Watch Video Solution**

Draw

the

 $y=\sin^{-1}\lvert\sin x
vert ext{ and } y=\left(\sin^{-1}\lvert\sin x
vert
ight)^2, 0\leq x\leq 2\pi$

graph

of

29.

- **1.** Draw the graph of $y = \tan^{-1} x + \cot^{-1} x$

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- Find the number of real solutions to the equation $3\cos^{-1}x - \pi x - \frac{\pi}{2} = 0$
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- **3.** Evalute $\left[\lim_{x\to 0}\frac{\sin^{-1}x}{x}\right]=1$, where $[\cdot]$ represets the greatest interger function.
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4. Solve $\tan^{-1} x > \cot^{-1} x$ graphically. Also find where f(x) = max. $\lceil \tan^{-1} x, \cot^{-1} x \rceil$ is non-differentiable. Also find the range of y = f(x).

5. Match the colums.

Column I	Column II
(a) $\sin^{-1} x + x > 0$, for	(p) $x < 0$
b) $\cos^{-1} x - x \ge 0$, for	(q) $x \in (0, 1]$
c) $\tan^{-1} x + x < 0$ for	(r) $x \in [-1, 0]$
1) $\cot^{-1} x + x > 0$, for	(s) $x > 0$



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- **6.** Drew the graph of $y=\cos^{-1}\sqrt{\log_{\lfloor x\rfloor}\left(\frac{|x|}{x}\right)}$ where $\lfloor\cdot\rfloor$ represents the greastest integer function.
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- 7. Find the value of $\int_0^{100\pi} \sin^{-1}(\sin x) dx.$
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8. Draw the graph of $y=\sin^{-1}, \frac{1}{x}$



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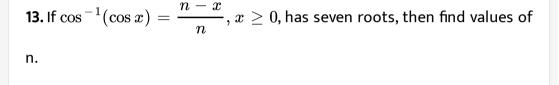
- **9.** Draw the graph of $y=\sin^{-1}ig(x^2ig)$
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10. Draw the graph of $y=\cos^{-1}x^3$ and compare with the graph of $y=\cos^{-1}x$.



- **11.** Draw the graph of $y=\cos^{-1}(2^x)$.
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14. Draw the graph of $f(x) = \left[\cot^{-1} x\right]$, where $[\cdot]$ represents the greatest integer funtion.



15. Draw the graph of $y = \operatorname{cosec}(\operatorname{cosec}^{-1} x)$ or $y = \operatorname{sec}(\operatorname{sec}^{-1} x)$.



16. Draw the graph of $f(x) = \cot^{-1} \left(\frac{2-|x|}{2+|x|} \right)$.



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17. Draw the graph of $y=\sin^{-1}\!\left(2x\sqrt{1-x^2}
ight)$



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18. Draw the graph of $y= an^{-1}igg(rac{3x-x^3}{1-3x^2}igg)$.



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