



MATHS

BOOKS - CENGAGE

GRAPH OF INVERSE TRIGONOMETRIC FUNCTIONS

Illustrations

1. Solve $\sin^{-1} x \leq \cos^{-1} x$ graphically. Check the differentiability of $f(x) = \min. \{ \sin^{-1} x \leq \cos^{-1} x \}$. Also find the range of $y = f(x)$

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2. Prove that $\left[\lim_{x \rightarrow 0} \frac{\tan^{-1} x}{x} \right] = 0$, where $[.]$ represents the greatest integer function.

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

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4. Draw the graph of $y = \sin^3 x$.

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5. Draw the graph of $y = \cos^{-1}\{x\}$, where $\{ \cdot \}$ represents the fractional part function.

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

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

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8. Draw the graph of $y = \cos^{-1}(x^2)$.

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

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

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11. Draw the graph of $y = \sin^{-1}|x|$.

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12. Draw the graph of the function $y = f(x) = \tan^{-1}\left(\frac{1-x^2}{1+x^2}\right)$.

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

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14. Draw the graph of $y = \tan(3x)$.

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

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

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

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

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



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20. Draw the graph of $y = \cos^{-1}(x^2 + 2)$.



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



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



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23. The sum of roots of the equation $\cos^{-1}(\cos x) = [x]$, $[.]$ denotes the greatest integer function, is (a) $2\pi + 3$ (b) $\pi + 3$ (c) $\pi - 3$ (d) $2\pi - 3$

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24. Find the value of $\int_0^{100\pi} \sin^{-1}(\sin x) dx$.

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25. Draw the graph of $y = x + \frac{1}{x}$.

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26. Find the range of $\tan^{-1}\left(\frac{2x}{1+x^2}\right)$

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

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

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29. Draw the graph of $y = \sin^{-1}|x|$.

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Exercise

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

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2. Find the number of real solutions to the equation $\log_{0.5} x = |x|$.



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3. Prove that $\left[\lim_{x \rightarrow 0} \frac{\sin x}{x} \right] = 0$, where $[.]$ represents the greatest integer function.



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4. Solve $\tan^{-1} x > \cot^{-1} x$



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5. Match the following Column I to Column II

Column A	Column B
(1) Mass	(a) m/s
(2) Weight	(b) m/s ²
(3) Acceleration	(c) kg
(4) Velocity	(d) N

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6. Draw the graph of $y = \cos^{-1}(x\% +^2)$.

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



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9. Draw the graph of $y = \cos^{-1}(x^2 + 2)$.



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



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11. Draw the graph of $y = \cos^{-1}(x^2 + 2)$.



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12. Draw the graph of $y = \cos^{-1}\{x\}$, where $\{ \cdot \}$ represents the fractional part function.

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13. If $f(x) = 0$ has n roots, then $f'(x) = 0$ hasroots

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14. Draw the graph of $f(x) = [\cot^{-1} x]$, where $[\cdot]$ represents the greatest integer function.

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15. Draw the graph of $y = |x|$.

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



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17. Draw the graph of $y = \sin^{-1}(x - 3)$.



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



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