MATHS

BOOKS - CENGAGE

GRAPHICAL TRANSFORMATIONS

Illustrations

1. Plot $y = |x|, y + x - 2|, and y = |x|2|$

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

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3. Draw the graph of $y = \log_e(x + 3)$,

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

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5. Draw the graph of $y = |x - 3| + 1$.

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6. Solve $3x + 2y > 12$ graphically

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7. For $a \leq 0,$ jdetermine all real roots of the equation

$x^2 - 2a|x - a| - 3a^2 = 0$

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8. Consider the function $f(x) = \begin{cases} x - [x] - \frac{1}{2}, & \text{if } x \notin Io, \\ \text{if } x \in I, where[.] \end{cases}$ denotes the fractional integral function and I is the set of integers. Then find $g(x) = maxx^2, f(x), |x|; -2 \leq x \leq 2.$

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9. If $f(x) = 2x + 1$ and $g(x) = x^2 - 2$, then $gof(x)$ is

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10. Find angle between the vectors ,When $\vec{a} = \hat{i} - 2\hat{j} + 3\hat{k}$ and $\vec{b} = 3\hat{i} - 2\hat{j} + \hat{k}$

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11. Draw the graph of $y = 0.5(x-1)^2$ and compare with $y = (x-1)^2$.

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12. Plot $y = \sin x and y = \sin 2x$.

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13. Find fog(x), if f(x)=|x| and g(x)=|5x−2|

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14. Plot the curve $y = (\log)_e(-x)$.

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15. To draw the graph of y = log e (− x) , flip the graph of y = log e x over the y-axis shown in the following figure.

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16. Find the value of k for which the equation $x^2 - 6x + k = 0$ has distinct roots.

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

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18. Draw the graph of $y = -\log_e x$.

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19. Draw the graph of $y = 2 - |x - 1|$.

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

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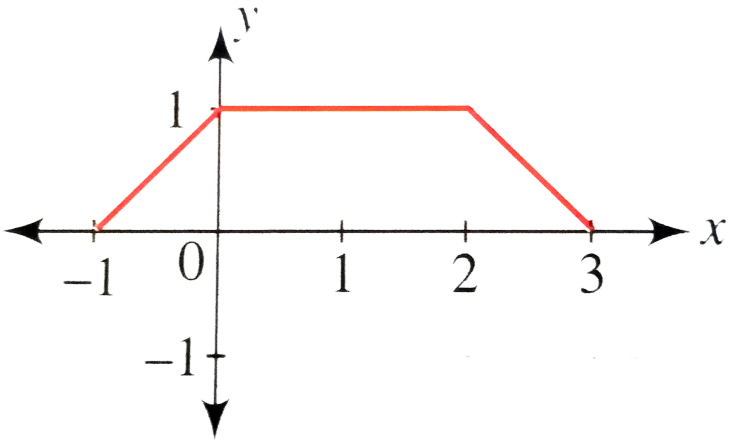
21. Given the graph of $y = f(x)$.



Draw the graphs of the followin.

(a) $y = f(1 - x)$ (b) $y = -2f(x)$

(c) $y = f(2x)$ (d) $y = 1 - f(x)$

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22. Draw the graph for $y = |\log x|$

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

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24. Draw the graph of $y = f(x) = \sqrt{1 - \cos x}$

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25. Drew the graph of $y = |\sin x - 0.5|$.

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26. The number of solution of $2\cos x = |\sin x|$ where $x \in [0.4\pi]$ is/are

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27. Solve $\left|x^2 + 4x + 3\right| + 2x + 5 = 0.$

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28. Solve $\cos 2x > |\sin x|, x \in \left(-\frac{\pi}{2}, \pi\right)$

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29. Prove that the equation $2s \in x|x| + a$ has not solution for $a \in \left(\frac{3\sqrt{3} - \pi}{3} - \infty \right)$.

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30. Solve $|x^2 - 1| + |x^2 - 4| < 6$ graphically.

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31. Discuss the differentiability of $f(x) = mim.\{|x|, |x - 2|, 2 - |x - 1|\}$.

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32. If the equation $\left|x^2+bx+c\right|=k$ has four real roots, then `b^2-4c >0a n d00a n dk >(4c-b^2)/4` none of these

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33. Sketch the curve $y=\log|x|$

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34. Draw the graph of $y=\sin|x|$.

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35. Draw the graph of $y = [|x|]$, where $[.]$ denotes the greatest integer function.

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

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

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38. Draw the graph of $y = \{|x|\}$, where $\{.\}$ represents the fractional part function.

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39. Draw the graph of the function: $f(x) = \left|x^2 - 3|x| + 2\right|$

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40. Draw the graph of $y = \left|1 - \frac{1}{|x| - 2}\right|$.

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41. Draw the graph of $|y| = \left|2^{|x|} - 3\right|$.

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42. Find the total number of solutions to $\sin \pi x = |In|x \mid \mid$.

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43. Find the number of solutions to $7^{|x|}(|1 - |x \mid \mid) = 1$.

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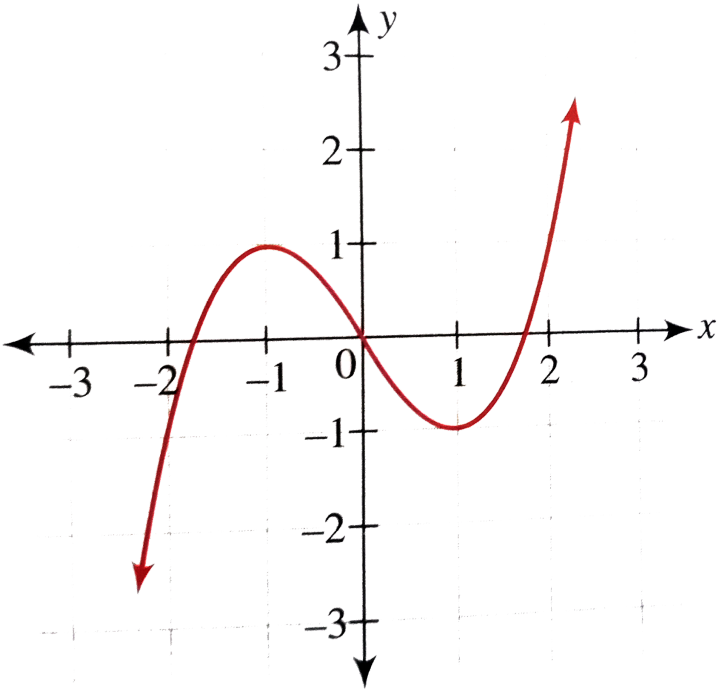
44. The graph of the function $y = f(x)$ is shown.



Find the number of solutions to the equation $||f(x)| - 1| = \frac{1}{2}$.

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45. Consider the function $f(x) = x^2 + bx + c$, where $D = b^2 - 4c > 0$, then match the follwoing columns.

Column I	Column II
Values of b and c	Number of points of non-differentiability of $g(x) = \|f(\|x\|)\|$
(a) $b < 0, c > 0$	(p) 1
(b) $c = 0, b < 0$	(q) 2
(c) $c = 0, b > 0$	(r) 3
(d) $b = 0, c < 0$	(s) 5

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46. Draw the graph of $|y| = \sin x$.

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47. Draw the graph of $|y| = \tan x$.

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48. Sketch the curve $|y| = (x-1)(x-2)$.

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49. Draw the graph of $|y| = \{x\}$, where $\{.\}$ represents the fractional part function.

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50. Draw the graph of $|x| + |y| = 1 + x$.

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51. Draw the graph of $|x| - |y| = 2$ using graphical transformation.

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52. Draw the graph of $y = \left|2^{|x|} - 3\right|$.

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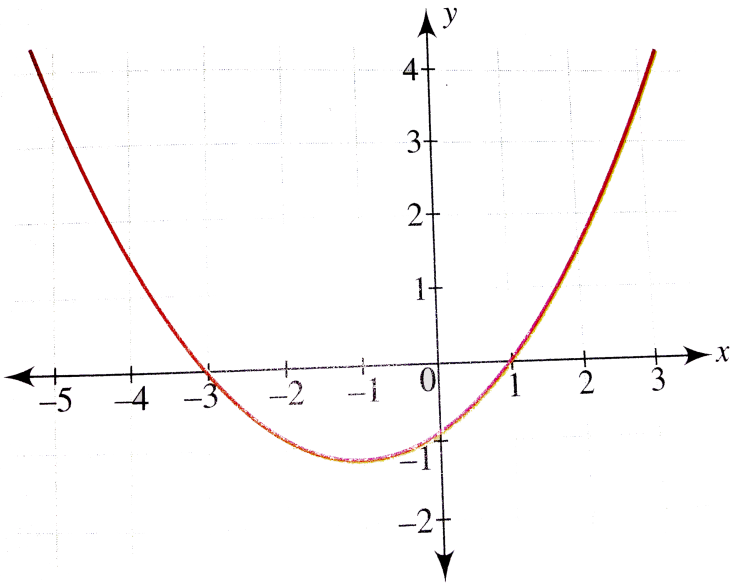
53. Given the graph of the function $y = f(x)$, draw the graph of $y = \text{sgn} f(x)$.



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54. about to only mathematics

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55. Draw the graph and discuss the continuity of $f(x) = [\sin x + \cos x], x \in [0, 2\pi]$, where [.] represents the greatest integer function.

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56. Let $f: R \to R: f(x) = (x + 1)$ and $g: R \to R: g(x) = \left(x^2 - 4\right)$. Write down the formulae for (fog).

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Exercise

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

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

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

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4. Draw the graph of $|y| = (x-1)(x-2)(x-3)$.

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

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

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7. Draw the graph of $y = |\log_e(x+3)|$.

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8. Draw the graph of $y = |\{x\} - 0.5|$, where $\{.\}$ represents the fractional part function.

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9. The number of real solution of the equation $\sqrt{1 + \cos 2x} = \sqrt{2}\sin^{-1}(\sin x),\ -\pi < x < \pi$is

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

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11. Find the number of points where the function $f(x) = \max |\tan x|, \cos|x|)$ is non-differentiable in the interval $(-\pi, \pi)$.

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12. Find the number of points of non-diferentiability for $f(x) = \max \{||x| - 1|, 1/2\}$.

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13. Let $f(x) = \max . \left\{ \left| x^2 - 2|x| \right|, |x| \right\}$ then number of points where $f(x)$ is non derivable, is :

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14. Draw the graph of $|y| = [x]$, where [.] represents the greatest integer function.

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