MATHS

BOOKS - CENGAGE MATHS (ENGLISH)

GRAPHICAL TRANSFORMATIONS

Illustration

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

6. Solve $|x - 1| - |x + 3| < 6$ graphically

Watch Video Solution

7. For $a \leq 0$, determine all real roots of the equation (1986, 5M)

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

Watch Video Solution

8. Consider the function $f(x) = \begin{cases} x - [x] - \frac{1}{2} & x \notin \\ 0 & x \in I \end{cases}$ where [.] denotes the fractional integral function and I is the set of integers. Then find $g(x)$ max . $\left[x^2, f(x), |x|\right\}, -2 \leq x \leq 2.$

Watch Video Solution

9. Draw the graph of $y = \log_e 3x$ and compare with $y = \log_e x$.

A. To draw the graph of $y = \log_e 3x$ we draw the graph of $y = \log_e x$ a

B.

C.

D.

Answer:

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

13. If $n \sin x = \log_e x$ has exactly 1 root, then find the possible value of $n (n \in N)$.

Watch Video Solution

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

Watch Video Solution

15. Draw the graph of $y = 2^{-x}$.

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

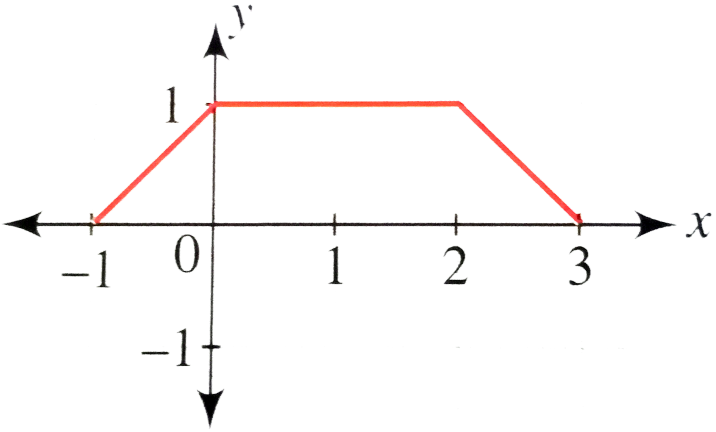
19. Draw the graph of $y = 2 - |x - 1|$.

Watch Video Solution

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

Watch Video Solution

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) $y = 1 - f(x)$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

26. The number of solution of $2\cos x = |\sin x|$

where $x \in [0.4\pi]$ is/are

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

29. Prove that the equation $2\sin x = |x| + a$ has no solution for $a \in \left(\frac{3\sqrt{3} - \pi}{3}, \infty\right)$.

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

32. If the equation $\left|x^2 + bx + c\right| = k$ has four real roots, then a. $b^2 - 4c > 0$ and $0 < k < \frac{4c - b^2}{4}$ b. $b^2 - 4c < 0$ and

$0 < k < \frac{4c - b^2}{4}$ c. $b^2 - 4c > 0$ and $k > \frac{4c - b^2}{4}$ d. none of these

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

39. If $y = x^3 - 3x + 2$, then draw the graph of the followings (i) $y = \left|x^3 - 3x + 2\right|$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

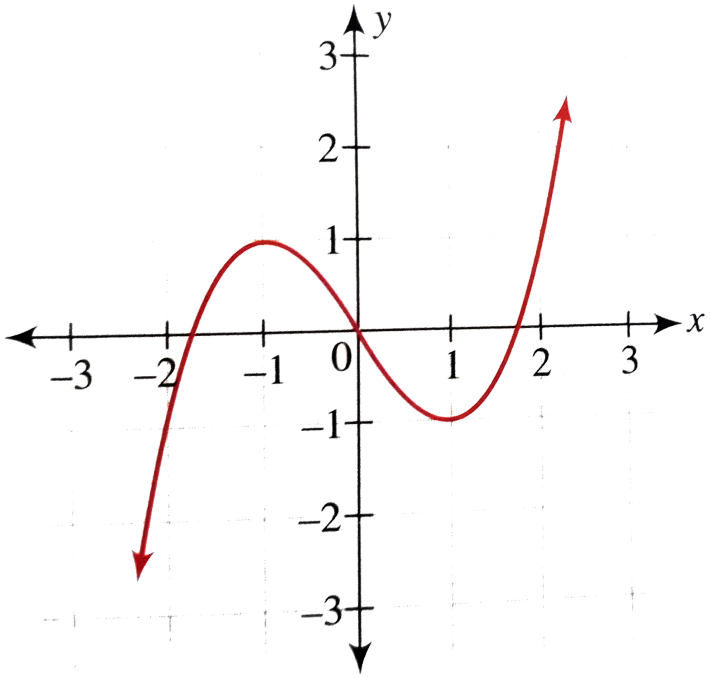
42. Find the total number of solutions to $\sin \pi x = |\ln|x||$.

Watch Video Solution

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

Watch Video Solution

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



Find the number of solutions to the equation

$$||f(x)| - 1| = \frac{1}{2}.$$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

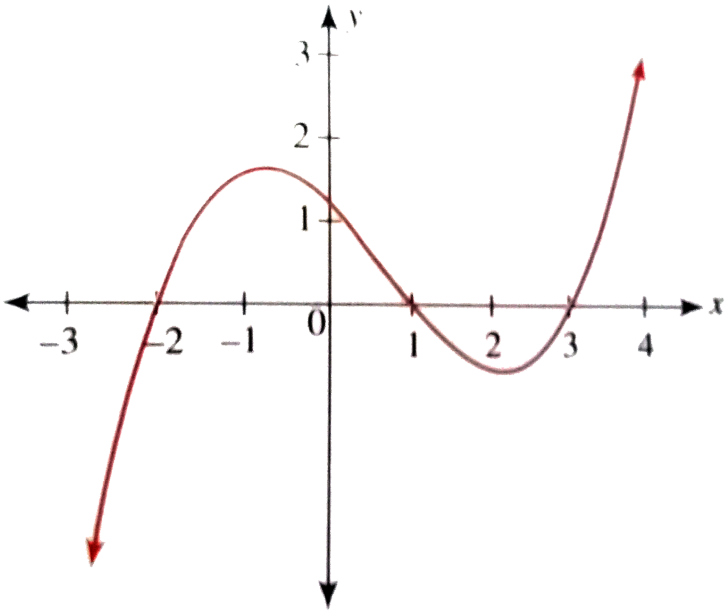
51. Draw the graph of $|x| - |y| = 2$ using graphical transformation.

Watch Video Solution

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

Watch Video Solution

53. The graph of the function $y = f(x)$ is as shown in the figure.



Then draw the graphs of

(i) $|y| = sgn(f(x))$ (ii) $|y| = |f(x\ |\ )|$

(iii) $y = x^{sgn}(f(x))$

Watch Video Solution

54. Draw the graph and find the points of discontinuity $f(x) = [2\cos x]$, $x \in [0, 2\pi]$. ([.] represents the greatest integer function.)

Watch Video Solution

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.

Watch Video Solution

56. Draw the graph and find the points of discontinuity for $f(x) = \left[x^2 - x - 1\right], x \in [-1, 2]$ ([.] represents the greatest integer function).

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

65. Draw the graph of $y = |\log_e|x||$.

Watch Video Solution

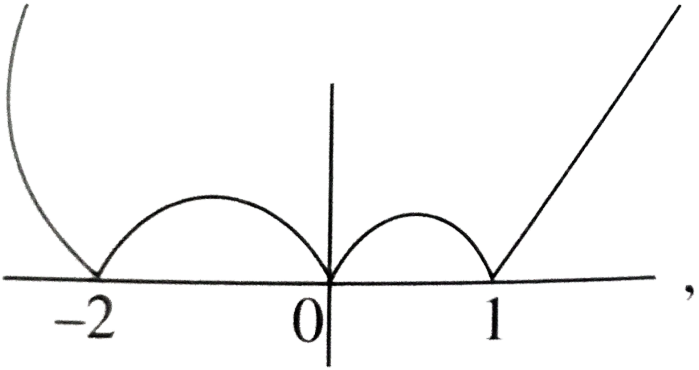
66. Draw the graph of $y = |\{x\} - 0.5|$, where $\{.\}$ represents the fractional part function.

Watch Video Solution

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

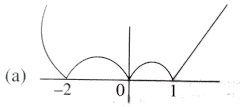
Watch Video Solution

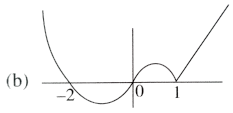
68. If the graph of $y = |f(x)|$ is as shown in

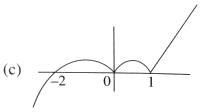


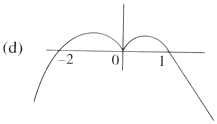
figure

then the graph of $y = f(x)$ may be

A. 

B. 

C. 

D. 

Answer:

Watch Video Solution

69. The number of real solutions of the equation

$$\sqrt{1+\cos 2x} = \sqrt{2}\sin^{-1}(\sin x), \ -\pi \leq x \leq \pi$$

is 0 (b) 1 (c) 2 (d) infinite

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

75. Draw the graph of $|2x| + |y| = 2$ using graphical transformation.

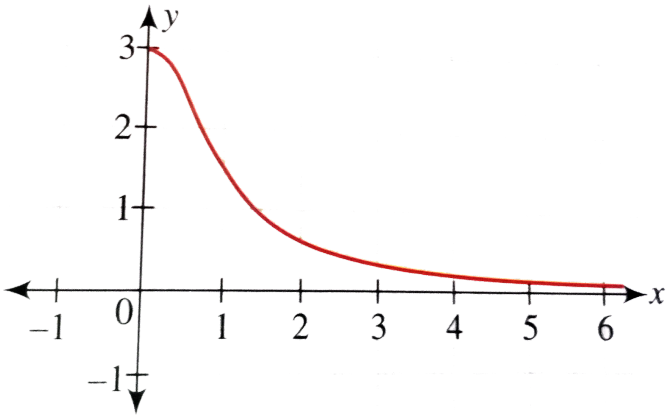
Watch Video Solution

76. Consider the function $f(x) = \{2x + 3, x \leq 1 \text{ and } -x^2 + 6, x > 1\}$ Then draw the graph of the function $y = f(x), y = f(|x|)$ and $y = |f(x)|$.

Watch Video Solution

77. The graph of $y = f(x)$ is as shown in the following figure. Draw the graph of $y = [f(x)]$

.



Watch Video Solution

78. Draw the graph of $y = [4 - x^2], |x| \leq 2$, where $[.]$ represents the greatest integer function.

Watch Video Solution