MATHS

BOOKS - CENGAGE MATHS (ENGLISH)

LINEAR INEQUALITIES

Others

1. Solve $|x| + |x - 2| = 2.$

Watch Video Solution

2. Solve $x^2 - 4|x| + 3 < 0.$

Watch Video Solution

3. Is $|tanx + \cot x| < |tanx| + |\cot x|$ true for any x? If it is true, then find the values of x.

Watch Video Solution

4. Solve $||x - 1| - 2| < 5$.

Watch Video Solution

5. For $x \in R$, find all possible values of $|x - 3| - 2$ (ii) $4 - |2x + 3|$

Watch Video Solution

Watch Video Solution

6. Solve $|x+1|+|2x-3|=4$.

Watch Video Solution

7. Find the possible values of $\sqrt{|x|-2}$ (ii) $\sqrt{3-|x-1|}$ (iii) $\sqrt{4-\sqrt{x^2}}$

Watch Video Solution

8. Prove that $\sqrt{x^2+2x+1}-\sqrt{x^2-2x+1}$ ={ $-2, x<-$ 12x,-1 lt=x lt=12,x >1`}

Watch Video Solution

9. For $2 < x < 4$, find the value of $|x|$. For $-3 \leq x \leq -1$, find the value of $|x|$. For $-3 \leq x < 1$, find the value of $|x|$. For $-5 < x < 7$, find the value of $|x-2|$. For $1 \leq x \leq 5$, find the value of $|2x-7|$.

Watch Video Solution

10. Solve $x^2 - x - 1 < 0$

Watch Video Solution

11. Solve $x^2 - x - 2 > 0$.

Watch Video Solution

12. Solve $(2x+1)(x-3)(x+7) < 0.$

Watch Video Solution

13. Solve $(x-1)(x-2)(1-2x) > 0.$

Watch Video Solution

14. Solve $\frac{2x-3}{3x-5} \geq 3$

Watch Video Solution

15. Solve $\frac{2}{x} < 3$.

Watch Video Solution

16. Solve $x > \sqrt{(1-x)}$

Watch Video Solution

17. Solve $\frac{x-2}{x+2} > \frac{2x-3}{4x-1}$.

Watch Video Solution

18. Solve $\frac{2}{x^2-x+1} - \frac{1}{x+1} - \frac{2x-1}{x^3+1} \geq 0$.

Watch Video Solution

19. Solve $\sqrt{(x-5)}-\sqrt{9-x}>1, x \in Z$.

Watch Video Solution

20. Solve $\left|x^2+x-4\right|=\left|x^2-4\right|+|x|$.

Watch Video Solution

21. Solve $|2x-3|+|x-1|=|x-2|$.

Watch Video Solution

22. Solve $|x-3| \geq 2$.

Watch Video Solution

23. If a, b, and c are nonzero rational numbers, then find the sum of all the possible values of $\frac{|a|}{a}+\frac{|b|}{b}+\frac{|c|}{c}$.

Watch Video Solution

24. Solve $\sqrt{x+3-4\sqrt{x-1}}+\sqrt{x+8-6\sqrt{x-1}}=1$

Watch Video Solution

25. Solve $|x| = x^2 - 1$.

Watch Video Solution

26. The sum of real roots of the equation $|x-2|^2 + |x-2| - 2 = 0$ is (A) 4 (B) 1 (C) 2 (D) -2

Watch Video Solution

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

Watch Video Solution

28. Find the set of all x foir which $\frac{2x}{(2x^2+5x+2)} > \frac{1}{(x+1)}$.

Watch Video Solution

29. Solve $\frac{x}{x+2} \leq \frac{1}{|x|}$

Watch Video Solution

30. If S is the set of all real x such that $\frac{2x-1}{2x^3+3x^2+x}$ is positive, then S contains

A. $\left(-\infty, -\frac{3}{2}\right)$

B. $\left(-\frac{3}{2}, \frac{1}{4}\right)$

C. $\left(-\frac{1}{4}, \frac{1}{2}\right)$

D. None of these

Answer: A

Watch Video Solution

31. The set of all real numbers x for which $x^2 - |x+2| + x > 0$ is $(-\infty, -2)$ b. $(-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)$ c. $(-\infty, -1) \cup (1, \infty)$ d. $(\sqrt{2}, \infty)$

Watch Video Solution

32. If x satifies $|x-1|+|x-2|+|x-3| \geq 6$, then (a) $0 \leq x \leq 4$ (b). $x \leq -2$ or ≥ 4 (c). $x \leq 0$ or $x \geq 4$ (d). None of these

Watch Video Solution

33. The largest interval for which $x^{12}-x^9+x^4-x+1>0$

Watch Video Solution

34. Solve $||x|-3|>1$.

Watch Video Solution

35. If $|\sin x + \cos x| = |\sin x| + |\cos x| (\sin x, \cos x \neq 0)$

, then in which quadrant does x lies?

Watch Video Solution

36. Solve $|3x - 2| = x$.

Watch Video Solution

37. Solve $1 - x = \sqrt{x^2 - 2x + 1}$.

Watch Video Solution

38. Solve $\left|x^2-2x\right|+|x-4|>\left|x^2-3x+4\right|$.

Watch Video Solution

39. Solve the following: (a) $|x-2|=(x-2)$ (b) $\left|x^2-x\right|=x^2-x$

Watch Video Solution

40. Let $y=\sqrt{\dfrac{(x+1)(x-3)}{(x-2)}}$. Find all the real values of x for which y takes real values.

Watch Video Solution

41. Solve $|x-1|+|x-2| \geq 4$.

Watch Video Solution

42. Solve the following: $|x-2|=1$ (ii) $2|x+1|^2-|x+1|=3$

Watch Video Solution

43. Find the value of x for which following expressions are defined: $\frac{1}{\sqrt{x-|x|}}$ (ii) $\frac{1}{\sqrt{x+|x|}}$

Watch Video Solution

44. Find all real values of x which satisfy $x^2 - 3x + 2 > 0 and x^2 - 2x - 4 \leq 0.$

Watch Video Solution

45. Find the values of a for which eht equation $||x - 2| + a| = 4$ can have four distinct real solutions.

Watch Video Solution

46. Solve $x + \sqrt{x} \geq \sqrt{x} - 3$.

Watch Video Solution

47. Solve $\left(x^2-4\right)\sqrt{x^2-1}<0$.

Watch Video Solution

48. Solve the following : $|x|=5$ (ii) $x^2-|x|-2=0$

Watch Video Solution

49. Solve $1 \leq |x-2| \leq 3$.

Watch Video Solution

50. Solve $0<|x-3| \leq 5$.

Watch Video Solution

51. Solve $x(x+2)^2(x-1)^5(2x-3)(x-3)^4 \geq 0.$

A. $x \in [0,1] \cup \left[\frac{3}{2}, \infty\right)$

B. $x \in \left[\frac{3}{2}, \infty\right)$

C. $x \in [0,1]$

D. none of these

Answer: A

Watch Video Solution

52. Solve $x(2^x-1)(3^x-9)^5(x-3) < 0.$

Watch Video Solution

53. Solve $\left(x^2-x-1\right)\left(x^2-x-7\right)<-5$.

Watch Video Solution

54. Let $a>2$ be a constant. If there are just 18 positive integers satisfying the inequality $(x-a)(x-2a)\left(x-a^2\right)<0$, then find the value of a.

Watch Video Solution

55. Find the set of all possible real value of a such that the inequality $(x-(a-1))\left(x-\left(a^2+2\right)\right)<0$ holds for all $x\in(-1,3)$.

A. $(0, 1)$

B. $(-\infty, -1]$

C. $(-\infty, -1)$

D. $(1, \infty)$

Answer: B

Watch Video Solution

56. Find all possible values of $\frac{x^2+1}{x^2-2}$.

Watch Video Solution

57. Solve $\sqrt{x-2} \geq -1$.

Watch Video Solution

58. Solve $\sqrt{x-1} > \sqrt{3-x}$.

Watch Video Solution

59. Solve $|2^x - 1| + |4 - 2^x| < 3$.

Watch Video Solution

60. Solve $0 < |x| < 2$.

Watch Video Solution

61. Solve $\left(\frac{1}{3}\right)^{\frac{|x+2|}{2-|x|}} > 9.$

Watch Video Solution

62. Find all integers x for which $(5x-1) < (x+1)^2 < (7x-3)$.

Watch Video Solution

63. Solve $\left|\frac{x-3}{x+1}\right| \leq 1.$

Watch Video Solution

64. Solve $\left|\frac{x+1}{x}\right| + |x+1| = \frac{(x+1)^2}{|x|}$.

Watch Video Solution

65. Solve $\left|1 + \frac{3}{x}\right| > 2$

Watch Video Solution

66. Solve $|3x - 2| < 4$.

Watch Video Solution

67. If

$$f(x) = x^9 - 6x^8 - 2x^7 + 12x^6 + x^4 - 7x^3 + 6x^2 + x - 3,$$

find $f(6)$.

Watch Video Solution

68. Solve $|x - 3| + |x - 2| = 1$.

Watch Video Solution