

WAVY CURVE INEQUALITIES - Homework

1. If $\frac{(x^2 - 1)(x + 2)(x + 1)^2}{(x - 2)} < 0$, then x lies in the interval
 (A) $(-2, -1) \cup (1, 2)$ (B) $(-\infty, -2) \cup (2, \infty)$
 (C) $(-2, -1) \cup (2, \infty)$ (D) $(-2, -1) \cup (1, \infty)$
2. If $\frac{x-2}{x+2} \geq \frac{2x-3}{4x-1}$, then x belongs to
 (A) $(-\infty, -2] \cup \left[\frac{1}{4}, 1\right) \cup (4, \infty)$ (B) $(-\infty, -2] \cup \left(\frac{1}{4}, 1\right) \cup (4, \infty)$
 (C) $(-\infty, -2) \cup \left[\frac{1}{4}, 1\right] \cup [4, \infty)$ (D) None of these
3. If $\frac{x-3}{5} \geq \frac{3-x}{8x}$, then x belongs to
 (A) $\left[-\frac{5}{8}, 0\right) \cup [3, \infty)$ (B) $\left[-\frac{5}{8}, 3\right]$
 (C) $\left[-\frac{5}{8}, 0\right] \cup (3, \infty)$ (D) None of these
4. $x^2 - x \leq 1$ holds true for x belongs to
 (A) $\left[\frac{1-\sqrt{5}}{2}, \frac{1+\sqrt{5}}{2}\right]$ (B) $\left[\frac{1-\sqrt{5}}{2}, \frac{1+\sqrt{5}}{2}\right)$
 (C) $\left(-\infty, \frac{1-\sqrt{5}}{2}\right) \cup \left(\frac{1+\sqrt{5}}{2}, \infty\right)$ (D) None of these
5. $(x-1)^2 + (x-2)^2 + (x-3)^2 + (x-4)^2 + (x-5)^2 = 0$ is true for
 (A) $x = \{1, 2, 3, 4, 5\}$ (B) $x \in (-\infty, 1) \cup (2, 3) \cup (4, 5)$
 (C) No value of x (D) None of these
6. $\frac{(x-1)(x-2)}{x-3} > 0$ then x belongs to
 (A) $(1, 2) \cup (3, \infty)$ (B) $(-\infty, 1) \cup (2, 3)$ (C) $(-\infty, 2) \cup (3, \infty)$ (D) none of these
7. $\frac{(x+3)^2(x+4)}{x(x+3)} \leq 0$ then x belongs to
 (A) $(-\infty, -3]$ (B) $(-\infty, -4] \cup (-3, 0)$ (C) $[-4, 0] \cup (0, \infty)$ (D) None of these
8. $\frac{x^4 - 6x^3 + 11x^2 - 6x}{x} \geq 0$, then x belongs to
 (A) $(1, 2) \cup (3, \infty)$ (B) $(-\infty, 0] \cup [3, \infty)$ (C) $(1, 3) \cup (3, \infty)$ (D) none of these

9. $\frac{x}{x^4 - 6x^3 + 11x^2 - 6x} \leq 0$, then x belongs to
 (A) $(-\infty, 1) \cup (2, 3) - \{0\}$ (B) $(-\infty, 1] \cup [2, 3] - \{0\}$
 (C) $(1, 2) \cup (3, \infty)$ (D) $(-\infty, 0) \cup (0, 1) \cup (3, \infty)$
10. The solution set of x for which the expression $\frac{x(3^x - 1)(x + 1)^2}{(x - 3)(x - 2)^4}$ is positive, is given by
 (A) $(-\infty, -1) \cup (3, \infty)$ (B) $(-1, 2) \cup (3, \infty)$
 (C) $(3, \infty)$ (D) none of these
11. If $\frac{(x-1)(x^2-3)}{(x+5)} \geq 0$, then
 (A) $x \in (-\infty, -5) \cup (-\sqrt{3}, 1) \cup (\sqrt{3}, \infty)$ (B) $x \in (-5, -\sqrt{3}] \cup [1, \sqrt{3}]$
 (C) $x \in (-\infty, -5) \cup [-\sqrt{3}, 1] \cup [\sqrt{3}, \infty)$ (D) $x \in (-\infty, -5) \cup (-\sqrt{3}, 1] \cup [\sqrt{3}, \infty)$
12. If $\frac{(x^2+4)(x-2)}{(x-3)} < 0$, then
 (A) $x \in (-2, 3)$ (B) $x \in (2, 3)$ (C) $x \in (-2, 2)$ (D) none
13. $\frac{(x-1)^{2010}(x+2)^{2009}}{(x+3)^{2011}x^2} \geq 0$
 (A) $x \in (-\infty, -3) \cup [-2, \infty)$ (B) $x \in (-3, -2)$
 (C) $x \in (-\infty, -2)$ (D) $x \in (-\infty, -3) \cup [-2, \infty) - \{0\}$
14. The greatest integer x for which the inequality $\frac{x-3}{x^2+9x-22} < 0$ is satisfied, is equal to
 (A) -12 (B) -11
 (C) 2 (D) 3

Solve the Inequalities

15. $\frac{3(x-2)}{5} \geq \frac{5(2-x)}{3}$
16. $x^2 - 4x < 12$
17. $\frac{2x}{2x^2+5x+2} > \frac{1}{x+1}$
18. $2x - 3 < 5$ and $3 - 4x \leq 5$

WAVY CURVE INEQUALITIES

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|---------------------|---|------------------------------------|-------|-------------------|
| 1. A | 2. C | 3. A | 4. A | 5. C |
| 6. A | 7. B | 8. D | 9. A | 10. C |
| 11. C | 12. B | 13. D | 14. A | 15. $[2, \infty)$ |
| 16. $x \in (-2, 6)$ | 17. $x \in \left(-\frac{2}{3}, -\frac{1}{2}\right) \cup (-2, -1)$ | 18. $\left[-\frac{1}{2}, 4\right)$ | | |