Practice 20

Polynomial and Rational Inequalities

Solve the polynomial inequality and graph the solution set on a number line. Express the solution set in interval notation.

1) $(x - 2)(x + 9) > 0$ 1) _____

2) $(x + 3)(x - 5) \leq 0$ 2) _____

3) $x^2 - 4x + 3 > 0$ 3) _____

4) $x^2 - 2x - 35 < 0$ 4) _____

5) $x^2 - 3x - 10 \leq 0$ 5) _____

6) $x^2 + 5x \geq 0$ 6) _____

7) $x^3 + 5x^2 - x - 5 > 0$ 7) _____

Solve the rational inequality and graph the solution set on a real number line. Express the solution set in interval notation.

8) $\frac{x - 5}{x + 3} < 0$ 8) _____

9) $\frac{x - 1}{x + 6} > 0$ 9) _____

10) $\frac{-x + 5}{x - 4} \geq 0$ 10) _____

11) $\frac{(x + 10)(x - 4)}{x - 1} \geq 0$ 11) _____

12) $\frac{(x - 1)(3 - x)}{(x - 2)^2} \leq 0$ 12) _____

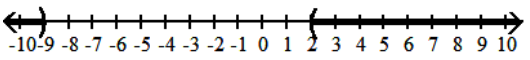
Solve the polynomial inequality and graph the solution set on a number line. Express the solution set in interval notation.

13) $(x + 7)(x + 6)(x - 1) > 0$ 13) _____

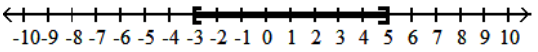
14) $(x + 2)(x - 1)(x - 4) < 0$ 14) _____

15) $(4x - 3)(x + 4) \leq 0$ 15) _____

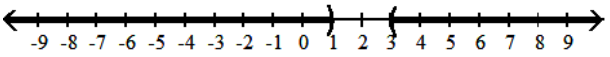
1) $(-\infty, -9) \cup (2, \infty)$



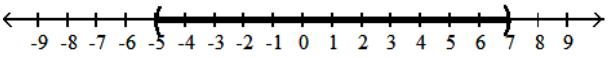
2) $[-3, 5]$



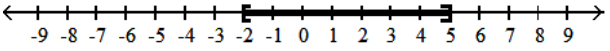
3) $(-\infty, 1) \cup (3, \infty)$



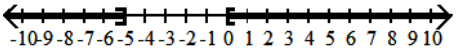
4) $(-5, 7)$



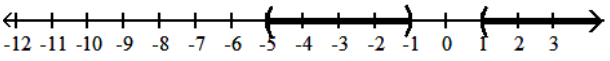
5) $[-2, 5]$



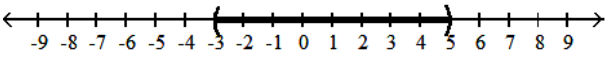
6) $(-\infty, -5] \cup [0, \infty]$



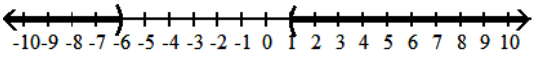
7) $(-5, -1) \cup (1, \infty)$



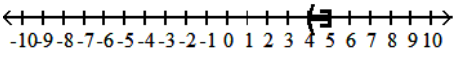
8) $(-3, 5)$



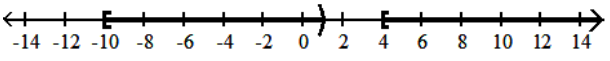
9) $(-\infty, -6)$ or $(1, \infty)$



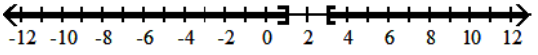
10) $(4, 5]$



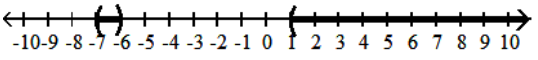
11) $[-10, 1) \cup [4, \infty)$



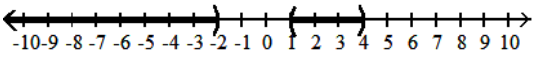
12) $(-\infty, 1] \cup [3, \infty)$



13) $(-7, -6) \cup (1, \infty)$



14) $(-\infty, -2) \cup (1, 4)$



15) $\left[-4, \frac{3}{4}\right]$