

1. Completely factor each of the following.

(a) $(3x - 1)^2 - (2x + 3)^2 =$

(b) $80a - 5a^5 =$

(c) $20x^3 - 3150x^2 + 2x^4 =$

2. Solve each of the following equations. Make sure to check your solutions.

(a) $(x + 3)(2x - 5) - (2x - 1)^2 = (5x + 2) - 2(x - 1)^2$

(b) $x(x + 1)(x - 2)(x + 3) = 0$

(c) $(x + 11)(x - 5) - 2(3 - x)^2 = -1$

3. Solve each of the following inequalities. Graph the solution set.

(a) $3 - (x - 2) > x + 3 - 8(x + 5)$

(b) $\frac{2x + 3}{5} - \frac{x - 1}{2} \geq x + 11$

4. Simplify each of the following.

(a) $\frac{x - 1}{x^2 - 1} =$

(b) $\frac{9a + 3a^2}{a^3 - 9a} =$

(c) $\frac{6x^3 - 72x^2 + x^4}{9x^2 - 36x + x^3} =$

5. In each case, determine whether the point given is on the graph of the equation $-x + y = x(x - 3 + x^2)$.

(a) $(-3, 12)$

(b) $(-1, 2)$

(c) $(2, 10)$

(d) $(3, 30)$