

To receive full credit, show all work and present the exact value of solutions.

1. Simplify each of the following expressions. Show all steps.

$$(a) \frac{-2 + 2(3^2 - (-4)^2) + 5 + 15 \div 5 \cdot 3}{-2^2 - (-5) + 1^3} = -1$$

$$(b) 3\frac{1}{2} - \frac{\left(-\frac{1}{2}\right)^2 - \frac{3}{4}}{\left(-\frac{1}{5}\right)^2} = 16$$

$$(c) \left| |-2 - 12 \div (-2)^2 \cdot 3| - 4^2 \right| = 5$$

$$(d) \frac{-5^2 + (-5)^2}{-5^2 - (-5)^2} = 0$$

$$(e) \frac{1}{2} - \frac{3}{5} \left(2\frac{1}{3}\right) - \frac{1}{10} = -1$$

2. Simplify each of the following.

$$(a) (5x - y) + (3x - 2y) = 8x - 3y$$

$$(b) (5x - y) - (3x - 2y) = 2x + y$$

$$(c) (5x - y)(3x - 2y) = 15x^2 - 13xy + 2y^2$$

$$(d) (2x - 3)(4x^2 + 6x + 9) = 8x^3 - 27$$

3. Evaluate  $\frac{2a^2 - ab - b^2}{2a + b}$  if

$$(a) a = 4 \text{ and } b = -1 \quad 5$$

$$(b) a = 2 \text{ and } b = -4 \quad \text{undefined}$$

$$(c) a = 3\frac{1}{2} \text{ and } b = -\frac{1}{2} \quad 4$$

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

$$(a) 6(x - 3) - 2(5 - 3x) = x - 6 \quad 2$$

$$(b) \frac{5x - 1}{6} - \frac{7 - 2x}{3} = 2x - 10 \quad 15$$

$$(c) (2x - 12)(x - 1) = 0 \quad 1, 6$$

5. Find the average of 48, 52, -80, -72, 150, and -14. 14

6. List all factors of 210. 1, 2, 3, 5, 6, 7, 10, 14, 15, 21, 30, 35, 42, 70, 105, 210