

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

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

$$(a) \sqrt{(-1)^4 - 6(2^2 - (-3)^2) - (-1)^3 + 10 \div 5 \cdot 2} = 6$$

$$(b) \frac{-3^2 - (-3)^2 - 16 \div (-2) \cdot (-2) + (-2)^2}{|(-4)(-7) - (-2)|} = -1$$

$$(c) \frac{(-1)^2 - \left(-\frac{1}{2}\right)^2}{\left(\frac{5}{8}\right)} + \frac{1}{5} = \frac{1}{3}$$

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

$$(a) a = 2 \text{ and } b = -3 \quad 7$$

$$(b) a = -1 \text{ and } b = -2. \quad 0$$

$$(c) a = -6 \text{ and } b = 3 \quad \text{undefined}$$

$$(d) a = -\frac{1}{2} \text{ and } b = \frac{3}{4} \quad -\frac{7}{4}$$

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

$$(a) 8(x - 3) - 3(5 - 2x) = x \quad 3$$

$$(b) \frac{3x - 1}{4} + \frac{8 - 4x}{3} = -3 - x \quad -13$$

$$(c) \frac{3x - 2}{5} + \frac{x + 4}{3} = \frac{14(x + 1)}{15} \quad \text{identity, all numbers are solution}$$

$$(d) \frac{3}{8}x + \left(1\frac{4}{5}\right) = \frac{3}{10} \quad -4$$

$$(e) (x - 3)(5x + 1) = 0 \quad 3, -\frac{1}{5}$$

4. Find the average of 55, 98, -20, -90, -15, and -34. -1