

1. Solve each of the following system of equations.

$$\text{a) } \begin{cases} 2x - y = -1 \\ 5x - 2y = 2 \end{cases}$$

$$\text{b) } \begin{cases} 2x - 5y = -9 \\ y = \frac{2}{5}x + \frac{9}{5} \end{cases}$$

$$\text{c) } \begin{cases} 3x + 5y = -20 \\ \frac{1}{3}x - \frac{1}{2}y = 2 \end{cases}$$

2. Simplify each if the following compound inequalities.

$$\text{a) } x < 3 \text{ and } -6 \geq x$$

$$\text{c) } m > -4 \text{ and } 10 > m$$

$$\text{b) } x < 3 \text{ or } -6 \geq x$$

$$\text{d) } m > -4 \text{ or } 10 > m$$

3. Simplify each of the following.

$$\text{a) } \frac{3^{-1}5^{-1}}{2^{-2}}$$

$$\text{c) } \frac{a^{-1}b^{-1}}{c^{-2}}$$

$$\text{e) } \frac{(-2a^{-4}b^3)^{-2}(-b^0a^3)^{-5}}{(2a^2b^4)^{-3}}$$

$$\text{b) } \frac{3^{-1} - 5^{-1}}{2^{-2}}$$

$$\text{d) } \frac{a^{-1} - b^{-1}}{c^{-2}}$$

$$\text{f) } \left(\frac{-3a^0b^{-4}a^{-1}b^2}{6b^5a^{-2}ab^{-3}} \right)^{-2}$$

4. Re-write as a fraction of two integers.

$$\text{a) } 0.5\overline{14} = 0.5141414\dots\dots$$

$$\text{b) } 22.\overline{34} = 22.3444\dots\dots$$

5. Completely factor each of the following.

$$\text{a) } 3x + x^2 - 28$$

$$\text{b) } -9x - 9x^2 + 4$$

$$\text{c) } 6x + 9x^2 + 1$$

$$\text{d) } 4x^2 - 20x + 34$$

6. Solve:

$$\text{a) } (2x - 1)^2 - (x + 3)^2 = 2x^2 - 8$$

$$\text{d) } |3x - 1| = 5$$

$$\text{g) } \left| \frac{1}{3}x + 4 \right| - 7 = 1$$

$$\text{b) } |x| = 7$$

$$\text{e) } 2|x - 7| + 1 = 11$$

$$\text{c) } |x| + 2 = 8$$

$$\text{f) } \left| \frac{1}{3}x + 4 \right| + 7 = 1$$

7. The sum of three consecutive integers is -75 . Find these numbers.

8. The square of a number is 8 greater than twice the opposite of the number. Find this number.

9. One side of a rectangle is 24 cm shorter than four times the other side. Find the length of the sides if the area of the rectangle is 160 cm.

10. Children's tickets cost \$7 each and adults' tickets cost \$12 each. We purchased 60 tickets for a total of \$460. How many of each tickets did we buy?