

Review Exercise Set 8

Exercise 1: Determine the values of the variable for which the following expression is defined.

$$\frac{5}{b^2 - 3b - 10}$$

Exercise 2: Simplify the following expression.

$$\frac{28xy}{32yz}$$

Exercise 3: Simplify the following expression.

$$\frac{26x^3y^2z^2}{24xy^2z^3}$$

Exercise 4: Simplify the following expression.

$$\frac{x^2 - 14x + 49}{6x^2 - 37x - 35}$$

Exercise 5: Simplify the following expression.

$$\frac{a^2 - 2a + ab - 2b}{a^2 - 2a + 3ab - 6b}$$

Review Exercise Set 8 Answer Key

Exercise 1: Determine the values of the variable for which the following expression is defined.

$$\frac{5}{b^2 - 3b - 10}$$

This rational expression will be defined for all values except for those that make the denominator zero. Therefore, we need to set the denominator equal to zero and solve for b to determine which values must be excluded.

$$\begin{aligned}b^2 - 3b - 10 &= 0 \\(b - 5)(b + 2) &= 0\end{aligned}$$

$$\begin{aligned}b - 5 = 0 \text{ or } b + 2 = 0 \\b = 5 \text{ or } b = -2\end{aligned}$$

The expression will be defined for all values of b as long as b is not equal to -2 or 5 .

Exercise 2: Simplify the following expression.

$$\begin{aligned}\frac{28xy}{32yz} \\&= \frac{4y \times 7x}{4y \times 8z} \\&= \frac{\cancel{4y} \times 7x}{\cancel{4y} \times 8z} \\&= \frac{7x}{8z}\end{aligned}$$

Exercise 3: Simplify the following expression.

$$\begin{aligned}\frac{26x^3y^2z^2}{24xy^2z^3} \\&= \frac{2xy^2z^2 \times 13x^2}{2xy^2z^2 \times 12z} \\&= \frac{\cancel{2xy^2z^2} \times 13x^2}{\cancel{2xy^2z^2} \times 12z} \\&= \frac{13x^2}{12z}\end{aligned}$$

Exercise 4: Simplify the following expression.

$$\begin{aligned} & \frac{x^2 - 14x + 49}{6x^2 - 37x - 35} \\ &= \frac{(x-7)(x-7)}{(6x+5)(x-7)} \\ &= \frac{(x-7)\cancel{(x-7)}}{(6x+5)\cancel{(x-7)}} \\ &= \frac{x-7}{6x+5} \end{aligned}$$

Exercise 5: Simplify the following expression.

$$\begin{aligned} & \frac{a^2 - 2a + ab - 2b}{a^2 - 2a + 3ab - 6b} \\ &= \frac{(a^2 - 2a) + (ab - 2b)}{(a^2 - 2a) + (3ab - 6b)} \\ &= \frac{a(a-2) + b(a-2)}{a(a-2) + 3b(a-2)} \\ &= \frac{(a-2)(a+b)}{(a-2)(a+3b)} \\ &= \frac{\cancel{(a-2)}(a+b)}{\cancel{(a-2)}(a+3b)} \\ &= \frac{a+b}{a+3b} \end{aligned}$$