

Bell Ringer - Solve the equation.

$$\frac{3}{2}(5x - 18) = -21$$

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$$\frac{2}{3} \cdot \frac{3}{2} (5x - 18) = -21 \cdot \frac{2}{3}$$

$$5x - 18 = -14$$

$$5x = 4$$

$$x = \frac{4}{5}$$

Chapter 11-4 Simplifying Rational Expression Notes

Rational Expression: a fraction whose numerator, denominator, or both are nonzero polynomials. Polynomials are expressions that cannot contain negative exponents.

Key Point: A rational expression is simplified if its numerator and denominator have no factors in common except a 1 or -1.

To simplify a rational expression, factor the numerator and denominator, and then divide out (cancel) any common factors.

Simplify, if possible.

1.

$$\frac{5(x + 4)}{5x}$$

$$\frac{\cancel{5}x + \cancel{20}}{\cancel{5}x}$$

⁴

Simplify, if possible.

1.
$$\frac{5(x + 4)}{5x}$$

$x + 4$

x

Reduce numerator and denominator by 5

Simplify, if possible.

$$2. \quad \frac{x + 4}{x}$$

Simplify, if possible.

$$2. \frac{x + 4}{x}$$

Cannot be simplified

Simplify, if possible.

$$3. \quad \frac{15x}{5 - 10x}$$

Simplify, if possible.

3.
$$\frac{15x^3}{5 - 10x^2}$$

Reduce all terms by 5

$$\frac{3x}{1 - 2x}$$

Simplify, if possible.

$$4. \quad \frac{x^2 + 6x + 9}{9 - x^2}$$

Simplify, if possible.

4.
$$\frac{x^2 + 6x + 9}{9 - x^2}$$

Factor completely

$$\frac{(x+3)(x+3)}{-1(x^2 - 9)} = \frac{\cancel{(x+3)}(x+3)}{\cancel{-1}(x+3)(x-3)}$$

Cancel

$$\frac{(x+3)}{-1(x-3)}$$

Simplify, if possible.

$$5. \frac{x^3 + 9x^2 + 14x}{x^2 - 4}$$

Simplify, if possible.

$$5. \frac{x^3 + 9x^2 + 14x}{x^2 - 4}$$

Factor Completely

$$\frac{x(x^3 + 9x + 14)}{(x+2)(x-2)} = \frac{x(x+7)(x+2)}{(x+2)(x-2)}$$

Reduce

$$\frac{x(x+7)}{x-2} \text{ or } \frac{x^2+7x}{x-2}$$