7.6 Solving Equations Containing Rational Expressions

Steps:

1. Factor your denominators

2. Determine the restrictions or non-permissable values

3. Eliminate all fractions

4. Solve for x

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$$\frac{x-1}{3} + \frac{4}{x} = \frac{x}{3}$$

$$x \neq 0$$

$$x(x-1) + 4(3) = x(x)$$

$$x^2 - x + 12 = x^2$$

$$-x + 12 = 0$$

$$12 = x$$

$$\frac{-1x}{-1} = \frac{-12}{-1}$$

$$x = 12$$

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1

$$\frac{3}{x+9} = \frac{2}{2x+18}$$

$$\frac{\cancel{2(x+9)} \; 3}{x+9} = \frac{2 \; \cancel{2(x+9)}}{2(x+9)}$$

$$x \neq -9$$

$$2 \cdot 3 = 2$$

$$\cancel{6 = 2}$$

No Solution

$$x + 9 = 0$$
$$x = -9$$

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$$\frac{\cancel{2x} \; x}{1} + \frac{3 \; \cancel{2x}}{2} = \frac{9 \; \cancel{2x}}{2x}$$

$$x \neq 0$$

$$2x(x) + 3x = 9$$

$$2x^2 + 3x - 9 = 0$$

$$\frac{6}{3} \cdot \frac{-3}{2}$$

$$(x+3)(2x-3) = 0$$

$$x+3 = 0 \quad | \quad 2x - 3 = 0$$
$$x = -3 \quad | \quad \frac{2x}{2} = \frac{3}{2}$$
$$x = 3/2$$

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2

$$\frac{2}{x+2} + \frac{8}{x^2-4} = 1$$

$$\frac{2}{x+2} + \frac{8(x+2)}{(x-2)(x+2)} = 1 \qquad \boxed{x \ne \pm 2}$$

$$2(x-2) + 8 = (x-2)(x+2)$$

$$2x - 4 + 8 = x^2 - 4$$

$$2x + 4 = x^2 - 4$$

$$0 = x^2 - 2x - 8$$

$$0 = (x-4)(x+2)$$

$$x - 4 = 0 \qquad x + 2 = 0$$

$$\boxed{x = 4} \qquad x = -2$$

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Assignment:

Pg. 434

4ac, 5, 7

10-13 odds

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