

Solve the rational equation and identify extraneous solutions.

$$\frac{x-3}{x} + \frac{3}{x+2} + \frac{6}{x^2+2x} = 0$$



We need to find a LCD. Consider all three denominators.

$$\left(\frac{(x+2)}{(x+2)}\right)\frac{x-3}{x} + \left(\frac{x}{x}\right)\frac{3}{x+2} + \frac{6}{x(x+2)} = 0$$

$$\frac{x^2 - x - 6}{x(x+2)} + \frac{3x}{x(x+2)} + \frac{6}{x(x+2)} = 0$$
$$\frac{x^2 + 2x}{x(x+2)} = 0$$
When a fraction is

Factor the denominator both sides to find the LCD.

Next we need to multiply to get common denominators.

When a fraction is equal to zero, the numerator must be equal to zero.

SO... NO Solution!

 $x = 0, \quad x = -2$ 

 $x^{2} + 2x = 0$ 

x(x+2) = 0

Checking for extraneous solutions.

$$\frac{2x}{x-1} + \frac{1}{x-3} = \frac{2}{(x-3)(x-1)}$$
$$x = -\frac{1}{2}, \quad x \neq 3$$
$$D: \mathbb{R}, x \neq 1, 3$$

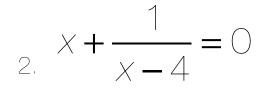
$$\frac{2(3)}{(3)-1} + \frac{1}{3-3} = \frac{2}{(3-3)(3-1)}$$

ZERO in the denominator. This is not allowed. It makes the fraction undefined.

## 2.7 Solving equations in one variable.

Solve the system of equations.

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



$$\frac{2x}{x-1} + \frac{1}{x-3} = \frac{2}{x^2 - 4x + 3}$$

$$\frac{x-3}{x} + \frac{3}{x+2} + \frac{6}{x^2+2x} = C$$



Complete the asymptote/hole worksheet. pg. 232-233 #1-17 odd