

8.6A HW

Monday, April 07, 2014
9:55 AM

① no

② yes

③ $x=8$

④ $x=2$

⑤ $x=-6, -1$

⑥ $x=3$

⑦ $x=1$

⑧ $x=\pm 3$

⑨ $x=2, 1$

⑩ $x=-6, 2$

Determine whether the given x -value is a solution of the equation.

1. $\frac{4}{2x-3} + \frac{2}{x+4} = \frac{2x}{x^2-8}; x = \frac{3}{2}$

$$\frac{4}{2(\frac{3}{2})-3} + \frac{2}{(\frac{3}{2})+4} = \frac{2(\frac{3}{2})}{(\frac{3}{2})^2-8}$$

$$\frac{4}{\cancel{3-3}} + \frac{2}{\frac{11}{2}} = \frac{3}{\frac{9}{4}-8} \quad \text{NO!}$$

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

$$\frac{4}{4+4} - \frac{2}{4} = \frac{2(4)-8}{4^2} \quad \text{YES!}$$

$$\frac{4}{8} - \frac{4}{8} = \frac{0}{16} \Rightarrow \frac{0}{8} = \frac{0}{16}$$

Solve the equation by cross multiplying. Check for extraneous solutions.

3. ~~$\frac{2}{x-3} = \frac{x+2}{1}$~~

$$2(x-3) = 1(x+2)$$

$$2x-6 = x+2$$

$$x=8$$

4. $\frac{1}{x+5} = \frac{2}{7x}$

$$1(7x) = 2(x+5)$$

$$7x = 2x + 10$$

$$5x = 10$$

$$x=2$$

5. $\frac{x}{3} = \frac{-2}{x+7}$

$$x(x+7) = -6$$

$$x^2 + 7x + 6 = 0$$

$$(x+6)(x+1) = 0$$

$$x+6=0$$

$$x=-6$$

$$x+1=0$$

$$x=-1$$

6. $\frac{2x+4}{5x} = \frac{2}{x}$

$$x(2x+4) = 2(5x)$$

$$2x^2 + 4x = 10x$$

$$2x^2 - 6x = 0$$

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

$$\frac{2x}{2} = \frac{0}{2}$$

~~$x=0$~~ extraneous

$$x-3=0$$

$$x=3$$

7. $\frac{x+1}{x-2} = \frac{x-3}{x}$

$$x(x+1) = (x-2)(x-3)$$

$$x^2 + x = x^2 - 5x + 6$$

$$6x - 6 = 0$$

$$6(x-1) = 0$$

$$x-1=0$$

$$x=1$$

8. $\frac{2x+3}{3x} = \frac{x}{2x-3}$

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

$$4x^2 - 9 = 3x^2$$

$$x^2 - 9 = 0$$

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

$$x+3=0$$

$$x=-3$$

$$x-3=0$$

$$x=3$$

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

$$(x-5)(x+2) = -12$$

$$x^2 - 3x - 10 = -12$$

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

$$(x-2)(x-1) = 0$$

$$x-2=0 \quad x-1=0$$

$$x=2 \quad x=1$$

10. $\frac{2x-6}{x-6} = \frac{x}{x+2}$

$$(2x-6)(x+2) = x(x-6)$$

$$2x^2 - 2x - 12 = x^2 - 6x$$

$$x^2 + 4x - 12 = 0$$

$$(x+6)(x-2) = 0$$

$$x+6=0 \quad x-2=0$$

$$x=-6 \quad x=2$$