

Algebra 2, Module 7, Lesson 3 – Solving Rational Equations Using Algebraic Methods

4. What is the solution of the equation $\frac{6x}{x+4} + 4 = \frac{2x+2}{x-1}$?

(A) $x = -1$

Incorrect. While -1 makes the numerator 0, it is not a solution to the equation.

(B) $x = 0$ or $x = -1$

Incorrect. Neither of these values are solutions to the equation.

(C) $x = \frac{-3}{2}$ or $x = 2$

Correct. Your solution should have been similar to:

$$\frac{6x}{x+4} + 4 = \frac{2x+2}{x-1}$$

$$(x+4)(x-1) \left[\frac{6x}{x+4} \right] + (x+4)(x-1)[4] = (x+4)(x-1) \left[\frac{2x+2}{x-1} \right]$$

$$6x(x-1) + 4(x+4)(x-1) = (x+4)(2x+2)$$

$$6x^2 - 6x + 4(x^2 + 3x - 4) = 2x^2 + 10x + 8$$

$$6x^2 - 6x + 4x^2 + 12x - 16 = 2x^2 + 10x + 8$$

$$10x^2 + 6x - 16 = 2x^2 + 10x + 8$$

$$8x^2 - 4x - 24 = 0$$

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

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

$$x = 2 \text{ or } x = -\frac{3}{2}$$

(D) $x \neq -4$ or $x \neq 1$

Incorrect. These are the values that would be excluded from the solution set, but they are not the solutions to the equation.