

OBJECTIVE 1: Terminology

A asymptote is an imaginary line that restricts the domain of the equation. (laser)

A rational equation is an equation that contains one or more rational expressions.

An extraneous solution is a solution of an equation derived from an original equation that is not a solution of the original equations.

OBJECTIVE 2: Solving Rational Equations

when...

- Two fractions are set equal
 - Cross multiply to solve
- Not a proportion
 - Follow ALL the steps below

STEPS:

1. Factor everything first or GCF.
2. Determine your LCD for the entire equation.
3. Restrict your domain by setting your LCD = 0.
4. Multiply by the missing terms of the LCD to each term in your equation.
5. Cross out the denominators.
6. Solve the equation.
7. Check for extraneous solutions.

a) $\frac{2}{x-8} = \frac{3}{4x-5}$

$2(4x-5) = 3(x-8)$

$8x-10 = 3x-24$

$5x = -14$

$x = -\frac{14}{5}$

LCD: $(x-8)(4x-5)$
 D: $(-\infty, \frac{5}{4}) \cup (\frac{8}{3}, \infty)$

$\frac{2}{-\frac{14}{5}-8} = \frac{3}{4(-\frac{14}{5})-5}$

$-0.185 = -0.185 \checkmark$

b) $x - \frac{18}{x} = 3$

$x(x) - 18(x) = 3(x)$

$x^2 - 18(x) = 3x$

$x^2 - 3x - 18 = 0$

$(x-6)(x+3) = 0$

$x-6 = 0$ $x+3 = 0$

$x = 6$

$x = -3$

LCD: x
 D: $(-\infty, 0) \cup (0, \infty)$

$6 - \frac{18}{6} = 3 \checkmark$

$-3 - \frac{18}{-3} = 3 \checkmark$

$$c) \frac{5x}{x-2} = \frac{3x+4}{x-2} + \frac{2}{x-2}$$

$$\text{LCD: } x-2$$

$$D: (-\infty, 2) \cup (2, \infty)$$

$$5x = 3x + 4 + 2$$

$$2x = 6$$

$$x = 3$$

$$\frac{5(3)}{3-2} = 15 \quad \checkmark$$

$$\frac{3(3)+4}{3-2} + \frac{2}{3-2} = 15$$

$$d) \frac{2x-5}{x-8} + \frac{x}{2} = \frac{11}{x-8}$$

$$\text{LCD: } 2(x-8)$$

$$D: (-\infty, 8) \cup (8, \infty)$$

$$2(2x-5) + x(x-8) = 11(2)$$

$$4x-10 + x^2 - 8x = 22$$

$$x^2 - 4x - 32 = 0$$

$$(x-8)(x+4) = 0$$

$$x-8=0 \quad x+4=0$$

$$x \neq 8$$

$$x = -4$$

$$\frac{2(8)-5}{8-8} + \frac{8}{2} \neq \frac{11}{8-8} \quad \times \text{ undefined}$$

$$\frac{2(-4)-5}{-4-8} + \frac{-4}{2} = \frac{11}{-4-8}$$

$$-0.9167 = -0.9167 \quad \checkmark$$

Still need help with:

Answer

STD

X, T, Q, N

OR calc to \checkmark answers!