

Example 1 → Solve the equation.
→ Check your solution.

$$1) \frac{5}{r} = \frac{r}{20}$$

$$\sqrt{r^2} = \sqrt{100}$$

$$r = \pm 10$$

$$2) \frac{3}{x-13} = \frac{x}{10}$$

$$x(x-13) = 30$$

$$x^2 - 13x = 30$$

$$\begin{array}{r} x^2 - 13x - 30 = 0 \\ \underline{-x^2 + 13x} \\ -30 \\ -30 \\ 0 \end{array}$$

$$(x-15)(x+2) = 0$$

$$x = 15, -2$$

Continue to Solve the equation and check your solution.

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

$$x(x+2) = 15$$

$$x^2 + 2x = 15$$

$$\begin{array}{r} x^2 + 2x - 15 = 0 \\ \underline{-x^2 - 2x} \\ -15 \\ -15 \\ 0 \end{array}$$

$$(x+5)(x-3) = 0$$

$$x = -5, 3$$

$$4) \frac{2m}{m+4} = \frac{3}{m-1}$$

$$3(m+4) = 2m(m-1)$$

$$3m+12 = 2m^2 - 2m$$

$$\begin{array}{r} 2m^2 - 5m - 12 = 0 \\ \underline{-2m^2 + 10m} \\ -3m - 12 \\ -12 \\ 0 \end{array}$$

$$0 = 2m^2 - 5m - 12$$

$$0 = (2m+3)(m-4)$$

$$m = 4, -3/2$$

Example #2 → Find the LCD of the rational expressions in the equation.

$$5) \frac{3}{x-5} + 7 = \frac{1}{2x+4}$$

LCD: $(x-5)(x+2)2$

$$\frac{6x+12}{(x-5)(2x+4)} + \frac{7(x-5)(2x+4)}{(x-5)(2x+4)} = \frac{1(x-5)(x+2)}{(x-5)(2x+4)}$$

$$6) \frac{4}{x-3} + 3 = \frac{1}{x}$$

LCD: $x(x-3)$

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

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

$$3x^2 - 5x = x - 3$$

$$\begin{array}{r} 3x^2 - 5x - x + 3 = 0 \\ -6x + 3 = 0 \\ \underline{-6x + 3} \\ 3 = 0 \end{array}$$

$$3x^2 - 6x + 3 = 0$$

$$3(x^2 - 2x + 1) = 0$$

$$3(x-1)(x-1) = 0$$

$$x = 1$$

Continue to Solve the equation and check your solution.

$$7) \frac{4}{x-1} + \frac{1}{1} = \frac{-10}{x^2-9x+8}$$

LCD: $(x-1)(x-8)$

$$\frac{4(x-8)}{1(x-8)} + \frac{1(x-1)(x-8)}{1(x-8)} = \frac{-10(x-1)(x-8)}{(x-8)(x-1)}$$

$$4(x-8) + (x-1)(x-8) = -10$$

$$4x - 32 + x^2 - 9x + 8 = -10$$

$$x^2 - 5x - 24 = -10$$

$$\begin{array}{r} x^2 - 5x - 24 + 10 = 0 \\ -5x - 14 = 0 \end{array}$$

$$(x-7)(x+2) = 0$$

$$x = 7, -2$$

Continue to Solve the equation and check your solution.

$$8) \frac{1}{b+3} + 2 = \frac{b^2-3}{b^2+12b+27}$$

LCD: $(b+3)(b+9)$

$$b+9 + 2(b+3)(b+9) = b^2-3$$

$$b+9 + 2b^2+24b+54 = b^2-3$$

$$2b^2+25b+63 = b^2-3$$

$$\begin{array}{r} 2b^2+25b+63 - b^2 + 3 = 0 \\ \underline{-b^2 + 25b + 66} \\ b^2 + 25b + 66 = 0 \end{array}$$

$$(b+22)(b+3) = 0$$

$$b = -22, -3$$

HOMEWORK.....

- 12.7 Worksheet
- #1-18; skip 8, 15, 16, 17
- Hint... #5 & #2- one of the two solutions do not "check"