

Date: 04.11.19

① Find the LCM (CD) of the denoms.

② Mul. every term by the LCM.

13.

$$\frac{7}{3x+1} - \frac{27x}{3x-1} = -9$$

$$\text{L.C.M} = \frac{(3x+1)(3x-1)}{1}$$

$$\frac{\cancel{(3x+1)}(3x-1)}{1} \cdot \frac{7}{\cancel{(3x+1)}} - \frac{(3x+1)\cancel{(3x-1)}}{1} \cdot \frac{27x}{\cancel{(3x-1)}} = -9(3x+1)(3x-1)$$

$$\Rightarrow 7(3x-1) - 27x(3x+1) = -9(9x^2-1)$$

$$\Rightarrow 21x - 7 - \cancel{81x^2} - 27x = -\cancel{81x^2} + 9$$

$$\Rightarrow \begin{array}{r} -6x - 7 \\ +7 \end{array} = \begin{array}{r} 9 \\ +7 \end{array}$$

$$\Rightarrow \frac{-6x}{-6} = \frac{16}{-6}$$

$$\Rightarrow x = \boxed{-\frac{8}{3}}$$

$$\underline{\underline{14.}} \quad \frac{1}{x-4} + \frac{9}{x+9} = \frac{10}{x^2+5x-36}$$

$$\frac{1}{x-4} + \frac{9}{x+9} = \frac{10}{(x-4)(x+9)}$$

$$\text{L.C.M} \rightarrow \frac{(x-4)(x+9)}{1}$$

$$\begin{aligned} \frac{\cancel{(x-4)}(x+9)}{1} \cdot \frac{1}{\cancel{(x-4)}} + \frac{(x-4)\cancel{(x+9)}}{1} \cdot \frac{9}{\cancel{(x+9)}} \\ = \frac{\cancel{(x-4)}\cancel{(x+9)}}{1} \cdot \frac{10}{\cancel{(x-4)}\cancel{(x+9)}} \end{aligned}$$

$$\Rightarrow x+9 + 9(x-4) = 10$$

$$\Rightarrow x+9 + 9x - 36 = 10$$

$$\Rightarrow \begin{array}{r} 10x - 27 = 10 \\ + 27 \qquad + 27 \end{array}$$

$$\Rightarrow \frac{10x}{10} = \frac{37}{10}$$

$$\Rightarrow x = \boxed{\frac{37}{10}} = \boxed{3.7}$$

## # Remembering the Domain!

$$\frac{x}{x+4} + \frac{4}{x+4} = 2$$

$$\frac{x+4}{x+4} = 2$$

$$\Rightarrow \boxed{1 = 2} \rightarrow \text{No solution.}$$

$$\text{L.C.M} \rightarrow \frac{x+4}{1}$$

$$\frac{\cancel{x+4}}{1} \cdot \frac{x}{\cancel{x+4}} + \frac{\cancel{x+4}}{1} \cdot \frac{4}{\cancel{x+4}} = 2(x+4)$$

$$x+4 = 2x+8$$

$$\begin{array}{r} -x \qquad -x \\ \hline \end{array}$$

$$4 = x+8$$

$$\begin{array}{r} -8 = -8 \\ \hline \end{array}$$

$$-4 = x$$

$$\therefore x = -4$$

[But  $x \neq -4!!$ ]

So, there is no sol<sup>n</sup>.

Note to self:

Pick up milk on

the way home AND

$x \neq -4!!$