

Key

1.

$$\begin{aligned}
 -4 + \frac{1}{4}|x| &= .45 + \frac{7}{8}|x| \\
 -\frac{1}{4}|x| &\quad -\frac{1}{4}|x| \\
 \hline
 -4 &= .45 + \frac{5}{8}|x| \\
 -.45 &\quad -.45 \\
 \hline
 \frac{8}{5} \cdot -4.45 &= \frac{5}{8}|x| \cdot \frac{8}{5} \\
 -7.12 &= |x| \\
 \text{Absolute Value cannot} & \\
 \text{be a negative \#!} & \\
 \text{No solution} &
 \end{aligned}$$

OR Clear The Denominator:

$$-4 + |x| - \frac{3}{4}|x| = 0.45 + \frac{7}{8}|x|$$

$$\begin{aligned}
 -\frac{4}{1} + \frac{|x|}{1} - \frac{3}{4}|x| &= \frac{45}{100} + \frac{7}{8}|x| \\
 \left(-\frac{4}{1} + \frac{|x|}{1} - \frac{3}{4}|x| \right) \cdot 200 &= \frac{9}{20} + \frac{7}{8}|x| \cdot 200
 \end{aligned}$$

*Note, ~~40~~ is the true LCM
 use the smallest one
 you can,
 or reduce
 as I did

$$-800 + 200|x| - 150|x| = 90 + 175|x|$$

$$\begin{aligned}
 -800 + 50|x| &= 90 + 175|x| \\
 -50|x| &\quad -50|x| \\
 \hline
 -800 &= 90 + 125|x| \\
 -90 &\quad -90 \\
 \hline
 -890 &= \frac{125|x|}{125}
 \end{aligned}$$

$$-890 = 90 + 125|x|$$

$$\frac{-890}{125} = \frac{125|x|}{125}$$

$$|x| = -7.12$$

But if $|x| = +\#$
 then
 $x = \pm \#$

no solution

2.

$$\begin{aligned}
 TL &= A(4 - rxy) \\
 TL &= 4A - Arxy \\
 -4A &\quad -4A \\
 \hline
 TL - 4A &= -Arxy \\
 -Arx &\quad -Arx \\
 \hline
 y &= \frac{TL - 4A}{-Arx}
 \end{aligned}$$

$$\textcircled{3} \quad \frac{2}{5} \left(\frac{8}{15}x - \frac{4}{1} \right) \geq \frac{2}{3}x + \frac{3}{5}$$

$$\left(\frac{16}{75}x - \frac{8}{5} \geq \frac{2}{3}x + \frac{3}{5} \right) \cdot 75$$

$$16x - 120 \geq 50x + 45$$

$$\begin{array}{r} 16x - 120 \geq 50x + 45 \\ +120 \qquad \qquad +120 \end{array}$$

$$16x \geq 50x + 165$$

$$\begin{array}{r} 16x \geq 50x + 165 \\ -50x \qquad \qquad -50x \end{array}$$

$$-34x \geq 165$$

$$\begin{array}{r} -34x \geq 165 \\ -34 \qquad \qquad -34 \end{array} ; x \leq -4.85$$

switch!!!

~~closed~~ Closed / shade left \leftarrow on the test

4.

Cross multiply

$$2(3x+2) = 5(9x-5)$$

$$6x + 4 = 45x - 25$$

$$\begin{array}{r} 6x + 4 = 45x - 25 \\ -6x \qquad -6x \end{array}$$

$$4 = 39x - 25$$

$$\begin{array}{r} 4 = 39x - 25 \\ +25 \qquad \qquad +25 \end{array}$$

$$29 = 39x$$

$$x = \frac{29}{39}$$

Restrictions $\rightarrow x \neq \frac{5}{9} \neq \frac{2}{3}$

5.

multiply by 1000

$$-2300x - 1276 = 6728 + 550x$$

$$\begin{array}{r} -2300x - 1276 = 6728 + 550x \\ +2300x \qquad \qquad +2300x \end{array}$$

$$-1276 = 6728 + 2850x$$

$$\begin{array}{r} -1276 = 6728 + 2850x \\ -6728 \qquad -6728 \end{array}$$

$$-8004 = 2850x$$

$$x \approx -2.808$$

round to the thousands

6.

multiply by 36

$$\left(\frac{5}{9} + \frac{5}{12}x = \frac{1}{12} + \frac{7}{9}x \right) \cdot 36$$

$$20 + 15x = 33 + 28x$$

$$\begin{array}{r} 20 + 15x = 33 + 28x \\ -15x \qquad \qquad -15x \end{array}$$

$$20 = 33 + 13x$$

$$\begin{array}{r} 20 = 33 + 13x \\ -33 \qquad -33 \end{array}$$

$$-13 = 13x$$

$$x = -1$$

7.

$$3x^2 - 10x - 8 = 0$$

$$\begin{array}{r|l} -24 & + \\ \hline -8 & 3-5 \end{array}$$

$$3x^2 - 12x + 2x - 8 = 0$$

$$\begin{array}{r|l} -12 & 2-10 \\ \hline -2 & -2 \end{array}$$

$$(3x^2 - 12x) + (2x - 8) = 0$$

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

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

$$3x+2=0$$

$$x-4=0$$

$$\frac{-2}{3} = \frac{-2}{3}$$

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

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

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

$$x = 4$$

8.

$$2x^2 + 7x = 4$$

$$\frac{-4}{-4} = \frac{-4}{-4}$$

$$2x^2 + 7x - 4 = 0$$

$$\frac{-8}{-8}$$

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

$$\frac{-4}{8} = \frac{-4}{8}$$

$$(2x^2 + 8x) + (-x - 4) = 0$$

$$2x(x+4) - 1(x+4) = 0$$

$$(2x-1)(x+4) = 0$$

$$2x-1=0$$

$$x+4=0$$

$$\frac{+1}{2} = \frac{+1}{2}$$

$$\frac{-4}{-4} = \frac{-4}{-4}$$

$$x = \frac{1}{2}$$

$$x = -4$$

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Part I

	Q	R	T
Sandy	1	$\frac{1}{3}$	3
Jerry	1	$\frac{1}{t}$	t
Both	1	3	$\frac{1}{3}$

$$\left(\frac{1}{3} + \frac{1}{t} = \frac{3}{1}\right) \cdot 3t$$

$$\frac{t}{t} + 3 = \frac{9t}{t}$$

$$\frac{3}{8} = \frac{8t}{8}$$

$$\boxed{\frac{3}{8} \text{ hr} = t}$$

Jerry's time

Part II

	Q	R	T
Jerry	1	$\frac{8}{3}$	$\frac{3}{8}$
Tom	1	$\frac{1}{t}$	t
Both	1	$\frac{4}{1}$	$\frac{1}{4}$

$$\left(\frac{8}{3} + \frac{1}{t} = \frac{4}{1}\right) \cdot 3t$$

$$\frac{8t}{t} + 3 = \frac{12t}{t}$$

$$\frac{3}{4} = \frac{4t}{4}$$

$$\boxed{t = \frac{3}{4} \text{ hrs}}$$

Final

9.

$$3x^2 + 5x = 6$$

$$3x^2 + 5x - 6 = 0$$

$$a=3 \quad b=5 \quad c=-6$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \cdot 3 \cdot -6}}{2 \cdot 3}$$

$$x = \frac{-5 \pm \sqrt{25 - (-72)}}{6}$$

$$x = \frac{-5 \pm \sqrt{97}}{6}$$

$$\frac{-5 + \sqrt{97}}{6} \quad \text{or} \quad \frac{-5 - \sqrt{97}}{6}$$

$$\approx \boxed{.8} \quad \text{or} \quad \boxed{-2.5}$$

10.

$$5x^2 - 10x + 3 = 0$$

$$\frac{5x^2}{5} - \frac{10x}{5} = -\frac{3}{5} \quad \left(\frac{-2}{2}\right)^2 = 1$$

$$x^2 - 2x + \underline{\quad} = \frac{-3}{5}$$

$$x^2 - 2x + 1 = -\frac{3}{5} + 1$$

$$(x-1)^2 = \frac{2}{5}$$

$$\sqrt{(x-1)^2} = \sqrt{\frac{2}{5}}$$

$$x-1 = \pm \sqrt{\frac{2}{5}}$$

$$x = 1 \pm \sqrt{\frac{2}{5}}$$

$$\boxed{1.632} \quad \& \quad \boxed{.368}$$