

#37 §1.1

$$\frac{1}{w-1} - \frac{1}{2w-2} = \frac{1}{2w-2}$$

$$\begin{aligned} w-1 \\ 2w-2 = 2(w-1) \\ \text{LCD} = 2(w-1) \end{aligned}$$

M1 Clean Fractions

M2 Combine into one fraction, Throw away LCD.

$$\text{M1} \quad \frac{1}{\cancel{w-1}} \cdot \cancel{2(w-1)} - \frac{1}{\cancel{2(w-1)}} \cdot \cancel{2(w-1)} = \frac{1}{\cancel{2(w-1)}} \cdot \cancel{2(w-1)}$$

$$2 - 1 = 1$$

$$1 = 1$$

① Check Domain of problem

Tautology -- Vacuous Truth. True, regardless of value of w .

Sol'n Set: $\{w \mid w \neq 1\} = \text{Domain of the problem}$

$$\#57 \quad \frac{x}{.376} + \frac{x}{.135} = 2 \quad > <$$

Use Method 2 Instead of clearing fractions, write everything over LCD.

$$LCD = (.376)(.135)$$

$$\frac{x}{.376} \cdot \frac{.135}{.135} + \frac{x}{.135} \cdot \frac{.376}{.376} = \frac{2}{1} \cdot \frac{(.135)(.376)}{(.135)(.376)}$$

$$\frac{.135x + .376x}{LCD} = \frac{2(.135)(.376)}{LCD}$$

$$\frac{A}{B} = \frac{C}{B} \Rightarrow A = C$$

Throw away Denominator.

$$.135x + .376x = 2(.135)(.376)$$

NOTE! If there are variables downstairs and it's a ">" or "<" situation, you may NOT ditch the denominator!

$$(.135 + .376)x = 2(.135)(.376)$$

$$x = \frac{2(.135)(.376)}{(.135 + .376)}$$

$$\approx .1986692759$$

.135 = a
.376 = b Then

$$\frac{x}{b} + \frac{x}{a} = 2 \quad LCD = ab$$

$$\frac{x}{b} \cdot \frac{a}{a} + \frac{x}{a} \cdot \frac{b}{b} = \frac{2}{1} \cdot \frac{ab}{ab}$$

$$ax + bx = 2ab$$

$$(a+b)x = 2ab$$

$$x = \frac{2ab}{a+b} = \frac{2(.135)(.376)}{(.135 + .376)} \approx$$

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Ans^(3/13)
.7760596348
(1/36)^(3/16)
.5107322488
2*.135*.376/.13
5+.376
.1986692759
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$$\sqrt{\frac{5}{3}} = \frac{\sqrt{5}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{5}\sqrt{3}}{\sqrt{3}\sqrt{3}} = \frac{\sqrt{5 \cdot 3}}{\sqrt{3 \cdot 3}} = \frac{\sqrt{15}}{3}$$

$$1.732 \approx \sqrt{3}$$

$$\frac{1}{\sqrt{3}} \quad 1.732 \overline{)1.0000} \quad \text{owie!}$$

$$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3} \quad 3 \overline{)1.732}$$

$$5^{\frac{1}{2}} \cdot \left(\frac{1}{3}\right)^{\frac{1}{2}} = \sqrt{5} \cdot \sqrt{\frac{1}{3}} = \sqrt{5} \frac{\sqrt{1}}{\sqrt{3}} = \sqrt{5} \cdot \frac{1}{\sqrt{3}}$$

$$= \dots = \frac{\sqrt{15}}{3}$$

(79)

$$2|x| + 7 = 6$$

$$2|x| = -1 \quad \text{Never!}$$

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

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

$$\begin{array}{r} -2x + 7 > 6 \\ -7 = -7 \\ \hline -2x > -1 \\ \frac{-2x}{-2} > \frac{-1}{-2} \end{array} \quad \text{BAD} \quad \left| \begin{array}{r} \frac{-2x}{-2} \\ \frac{-1}{-2} \end{array} \right.$$

Good!

⋮

$$-2x > -1$$

$$\frac{-2x}{-2} < \frac{-1}{-2}$$

$$x < \frac{-1}{-2}$$

Bad!

$$-2x > -1$$

$$\frac{-2x}{-2} > \frac{-1}{-2}$$

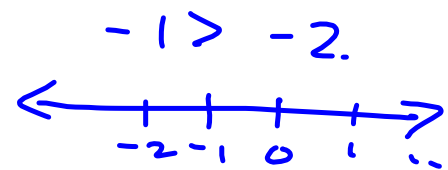
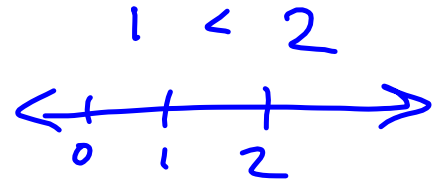
$$x < \frac{1}{2}$$

Does not follow
Does not follow

← optional step.

~~XXXXXXXXXX~~

$$\begin{aligned} \textcircled{93} \quad & 5+7|x+6| = 19 \\ & \begin{array}{r} -5 \\ \hline \end{array} \qquad \qquad \qquad \begin{array}{r} = -5 \\ \hline \end{array} \\ \Rightarrow & 7|x+6| = 14 \\ \Rightarrow & \frac{7|x+6|}{7} = \frac{14}{7} \\ \Rightarrow & |x+6| = \frac{14}{7} = 2 \end{aligned}$$



PEMDAS
SADM

$$\begin{aligned} \Rightarrow & x+6=2 \quad \text{OR} \quad x+6=-2 \\ \Rightarrow & \begin{array}{c} \leftarrow \text{---} | \text{---} | \text{---} \rightarrow \\ \quad -2 \quad \quad 0 \quad \quad 2 \\ \quad \uparrow \quad \quad \uparrow \\ \quad x+6 \quad \quad x+6 \end{array} \end{aligned}$$

$$\Rightarrow x = -4 \quad \text{OR} \quad x = -8$$

$$\Rightarrow x \in \{-4, -8\}$$

Book says "solution set: $\{-4, -8\}$ "

$$\textcircled{23} \quad \frac{x}{2} - 5 = -12 - \frac{2x}{3}$$

$$LCD = (2)(3)$$

M2

$$\frac{x}{2} \cdot \frac{3}{3} - \frac{5}{1} \cdot \frac{6}{6} = -\frac{12}{1} \cdot \frac{6}{6} - \frac{2x}{3} \cdot \frac{2}{2}$$

S: 1, 2, 5, 5, 9, 11, 13, 21, 27, 29, 33, 47, 49, 55, 61, 73, 75, 83, 91