

2.3: Combining Properties (cont'd)

Note Title

1/20/2015

Ex: Solve.

$$-\frac{1}{2}(6-5x) = \frac{2}{3}\left(\frac{3}{4} + 10x\right)$$

$$-\frac{1}{2}\left(\frac{6}{1}\right) - \frac{1}{2}(-5x) = \frac{2}{3}\left(\frac{3}{4}\right) + \frac{2}{3}(10x)$$

$$-\frac{6}{2} + \frac{5}{2}x = \frac{6}{12} + \frac{20}{3}x$$

$$-3 + \frac{5}{2}x = \frac{1}{2} + \frac{20}{3}x$$

$$\frac{5}{2}x - \frac{20}{3}x = \frac{1}{2} + 3$$

$$\frac{5}{2}x\left(\frac{3}{3}\right) - \frac{20}{3}x\left(\frac{2}{2}\right) = \frac{1}{2} + 3\left(\frac{2}{2}\right)$$

$$\frac{15}{6}x - \frac{40}{6}x = \frac{1}{2} + \frac{6}{2}$$

$$-\frac{25}{6}x = \frac{7}{2}$$

$$-\frac{6}{25}\left(-\frac{25}{6}x\right) = \frac{7}{2}\left(-\frac{3}{25}\right)$$

$$x = -\frac{21}{25}$$

Solution Set: $\left\{-\frac{21}{25}\right\}$

Solve.

Ex: $4(7x-2) = 2(14x-1)$

$$28x - 8 = 28x - 2$$

$$-8 = -2 \quad \text{False!}$$

$$-6 = 0 \quad \text{False!}$$

There are no x -values that make this equation true.

Answer:

No Solution

Notation

$=$ means "are equal to"

or
"are the same"

$\neq$ means "is not equal to"

("are not the same")

Solution Set: $\emptyset$
(the empty set)

Solve.

$$\text{Ex: } -2(3-x) + 5x = 7x - 6$$

$$-6 + 2x + 5x = 7x - 6$$

$$-6 + 7x = 7x - 6 \quad \text{True for every } x$$

$$7x - 6 = 7x - 6 \quad \text{True for every } x$$

$$\overset{+6}{7x - 6} = \overset{+6}{7x - 6} \quad \text{True! for every } x$$

$$\overset{-7x}{7x} = \overset{-7x}{7x} \quad \text{True! for every } x$$

$$0 = 0 \quad \text{True! for every } x$$

Sol'n Set: All real numbers

could also have gotten: $7x - 6 = 7x - 6$

$$\overset{-7x}{-6} = \overset{-7x}{-6} \quad \text{True!}$$

In xyz For "no solution", write DNE

(stands for Does Not Exist)

For "all real numbers", write oo

(two lower-case o's)

Section 2.3 is now done. (For bonus)

Prereading assignment for Thursday.

Read section 2.5 (pp. 183-188)

~~Work Through~~ Example 2
Rework

Similar Problem:

One number is 4 more than twice another. Their sum is 22. Find the numbers.