

## 6.2 Solve using Substitution 1-28-15

### Substitution Property of Equality:

Equals may be substituted for equals.

~ One equal quantity (expression) can **REPLACE** another in an equation.

TO DO SUBSTITUTION - make sure we have 1 isolated variable.

EX 1:

$$\begin{aligned} y &= 2x \\ * 3x + 4y &= 11 \end{aligned}$$

$$\begin{aligned} 3x + 4(2x) &= 11 \\ 3x + 8x &= 11 \\ \underline{11x} &= \underline{11} \\ 11 & \quad 11 \end{aligned}$$

Now y:

$$\begin{aligned} x &= 1 \\ y &= 2x \\ y &= 2(1) = 2 \end{aligned}$$

One Solution (x,y):  $(1, 2)$

Verify:

$$\begin{aligned} 3x + 4y &= 11 \\ 3(1) + 4(2) &= 11 \\ 3 + 8 &= 11 \end{aligned}$$

EX 2

$$\begin{aligned} y &= -4x + 12 \\ * 2x + y &= 2 \end{aligned}$$

$$\begin{aligned} 2x + (-4x + 12) &= 2 \\ 2x - 4x + 12 &= 2 \\ -2x + 12 &= 2 \end{aligned}$$

$$\begin{aligned} -2x &= -10 \\ \underline{2} & \quad \underline{-2} \end{aligned}$$

$$x = 5$$

Now y:

$$\begin{aligned} y &= -4x + 12 \\ y &= -4(5) + 12 \\ y &= -20 + 12 \\ y &= -8 \end{aligned}$$

One Solution:  $(5, -8)$  ✓

$$\begin{aligned} 2x + y &= 2 \\ 2(5) + (-8) &= 2 \\ 10 - 8 &= 2 \end{aligned} \quad \left. \vphantom{\begin{aligned} 2x + y &= 2 \\ 2(5) + (-8) &= 2 \\ 10 - 8 &= 2 \end{aligned}} \right\} \text{verify}$$

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Also:  $y = (2x+6)$   $(y) = \frac{1}{2}x - 7$

$$2x+6 = \frac{1}{2}x - 7$$

$(-11x+15)$