

## Substitution Method (7.4)

~~7.1~~

7.2 - graphing

~~7.3~~ - technology

A method used to solve for the intersection point of a linear system.

Substitution  $\Rightarrow$  to sub in

$$\text{ex.1) } y = 2x - 5$$

$$x = 3$$

$$y = 2(3) - 5$$

$$y = 6 - 5$$

$$y = 1$$

$$\text{ex.2) } y = 2x - 5$$

$$x = 3y + 6$$

$$y = 2(3y + 6) - 5$$

$$y = 6y + 12 - 5$$

$$y - 6y = 12 - 5$$

$$-5y = 7$$

$$\frac{-5y}{-5} = \frac{7}{-5} \Rightarrow y = -\frac{7}{5}$$

$$3) \quad 3x + 4y = -4$$

$$x = 2 - 2y$$

$$3(2 - 2y) + 4y = -4$$

$$6 - 6y + 4y = -4$$

$$-6y + 4y = -4 - 6$$

$$-2y = -10$$

$$\frac{-2y}{-2} = \frac{-10}{-2}$$

$$\boxed{y = 5}$$

← y-value of intersection point

Go back to rearranged equation

$$x = 2 - 2y$$

$$x = 2 - 2(5)$$

$$x = 2 - 10$$

$$\boxed{x = -8}$$

Intersection point  $(-8, 5)$

$$4) \quad y = 9 - x$$
$$2x + 3y = 11$$

$$2x + 3(9 - x) = 11$$

$$2x + 27 - 3x = 11$$

$$2x - 3x = 11 - 27$$

$$-x = -16$$

$$x = 16$$

$$y = 9 - x$$

$$y = 9 - (16)$$

$$y = -7$$

$$\underline{\underline{\text{soln}}}$$
$$(16, -7)$$

$$5) \quad \begin{array}{l} 2x - 4y = 7 \\ 4x + \underline{y} = 5 \end{array} \Rightarrow y = \underline{-4x + 5}$$

$$2x - 4(-4x + 5) = 7$$

↓

$$(1.5, -1)$$

Worksheet

1)  $-x + 9y = -5$

$x - 5y = 1 \Rightarrow x = 5y + 1$

easiest to  
rearrange

$$-(5y+1) + 9y = -5 \Rightarrow$$