

Simultaneous Linear Equations

$$\text{Ex 1} \quad 5x + 2y = 19 \quad (1)$$

$$4x + 3y = 18 \quad (2)$$

$$(1) \times 3 \quad 15x + 6y = 57 \quad (3)$$

$$(2) \times 2 \quad 8x + 6y = 36 \quad (4)$$

$$(3) - (4) \quad 7x = 21$$

$$x = \frac{21}{7}$$

$$\underline{x = 3}$$

Sub for x in (1)

$$5(3) + 2y = 19$$

$$15 + 2y = 19$$

$$2y = 19 - 15$$

$$2y = 4$$

$$y = \frac{4}{2}$$

$$\underline{y = 2}$$

$$\text{Ex 2} \quad 3x - 4y = 26 \quad (1)$$

$$4x - 2y = 18 \quad (2)$$

$$(2) \times 2 \quad 8x - 4y = 36 \quad (3)$$

$$(3) - (1) \quad 5x = 10$$

$$x = \frac{10}{5}$$

$$\underline{x = 2}$$

Sub for x in (1)

$$3(2) - 4y = 26$$

$$6 - 4y = 26$$

$$-4y = 26 - 6$$

$$-4y = 20$$

$$y = \frac{20}{-4} = -5$$

$$\begin{cases} x = 2 \\ y = -5 \end{cases}$$

Ex 3

$$4x - 3y = 0 \quad (1)$$

$$2x + 5y = 13 \quad (2)$$

$$(1) \times 5 \quad 20x - 15y = 0 \quad (3)$$

$$(2) \times 3 \quad 6x + 15y = 39 \quad (4)$$

$$(3) + (4) \quad 26x = 39$$

$$x = \frac{39}{26} = \frac{3}{2}$$

Sub for x in (2)

$$2\left(\frac{3}{2}\right) + 5y = 13$$

$$3 + 5y = 13$$

$$5y = 13 - 3$$

$$5y = 10$$

$$y = \frac{10}{5}$$

$$y = 2$$

$$\begin{cases} x = \frac{3}{2} \\ y = 2 \end{cases}$$