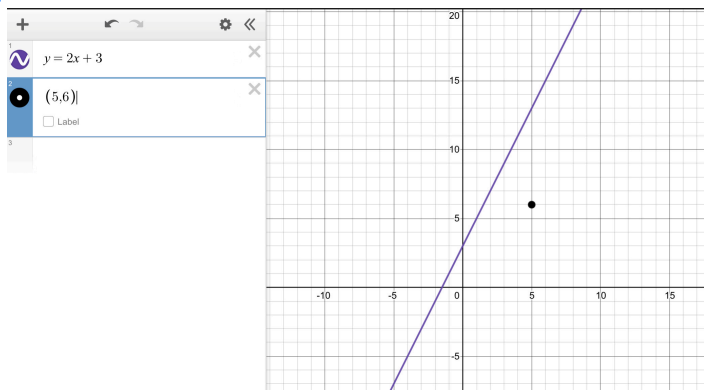


Equations of Straight lines

Ex1



Find the eqn of a
line parallel to
 $y = 2x + 3$
passing through $(5, 6)$

Parallel line is of the form $y = 2x + c$

$(5, 6)$ on the line

Sub in line

$$6 = 2(5) + c$$

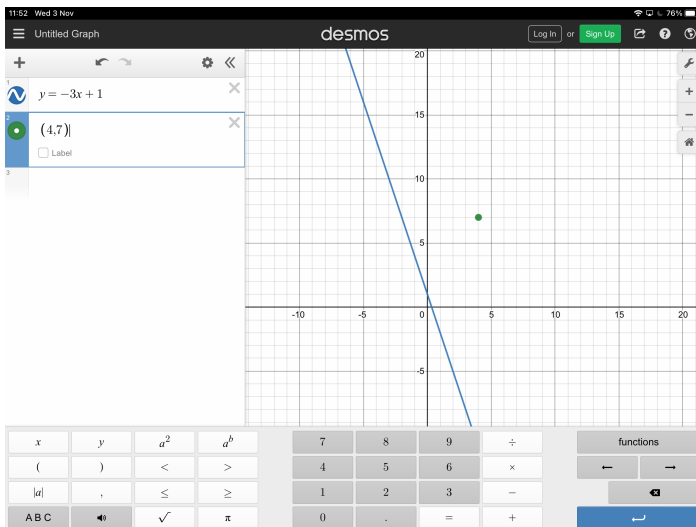
$$6 = 10 + c$$

$$6 - 10 = c$$

$$-4 = c$$

$$\underline{y = 2x - 4}$$

Ex2



Find eqn of line
parallel to
 $y = -3x + 1$
passing through
 $(4, 7)$

Line is of the form $y = -3x + c$

$(4, 7)$ on line \Rightarrow $7 = -3(4) + c$

$$7 = -12 + c$$

$$7 + 12 = c$$

$$19 = c$$

$$\underline{y = -3x + 19}$$

Ex 3 Find line parallel to $y = 4x - 3$
passing through $(2, 5)$

Line of form $y = 4x + c$

$(2, 5)$ on line $5 = 4(2) + c$

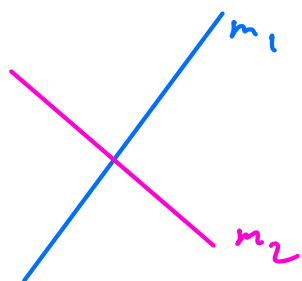
$$5 = 8 + c$$

$$5 - 8 = c$$

$$-3 = c$$

$$\underline{y = 4x - 3}$$

Perpendicular Gradients



If two lines are perpendicular with gradients m_1 and m_2

$$\text{then } m_2 = -\frac{1}{m_1}$$

Examples

m_1

m_2

2

$-\frac{1}{2}$

$-\frac{1}{4}$

+4

$\frac{3}{5}$

$-\frac{5}{3}$

1

-1

$$(3, 2) \perp \text{ to } y = 4x - 3$$

$$y = -\frac{1}{4}x + c$$

$$2 = -\frac{1}{4}(3) + c$$

$$2 = -\frac{3}{4} + c$$

$$\frac{11}{4} = c$$

$$y = -\frac{1}{4}x + \frac{11}{4}$$