

The straight line

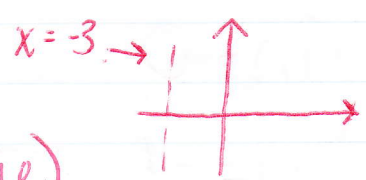
1. (a) $y = \boxed{2}x + \boxed{4}$
 $y = mx + c$
 $m = 2$
 $c = \underline{\underline{4}}$

(b) $y = \boxed{1}x + \boxed{2}$
 $y = mx + c$
 $m = 1$
 $c = \underline{\underline{2}}$

(c) $y = \boxed{\frac{1}{2}}x - \boxed{3}$
 $y = mx + c$
 $m = \frac{1}{2}$
 $c = \underline{\underline{-3}}$

(d) $y = \boxed{9}$ $(0 \times x = 0)$
 $y = mx + c$
 $m = 0$
 $c = 9$

(e) $x = \boxed{-3}$
 $m = \text{undefined (vertical line)}$
no y-intercept (doesn't cut y axis)
→ goes through x axis at -3



2. (a) $m = \frac{1}{3}$ y-intercept 3 $y = \underline{\underline{\frac{1}{3}x + 3}}$

(b) $m = 5$ $(0, 0)$
 $c = \del{0}$
 $y = \underline{\underline{5x}}$

(c) $m = 1$ $c = -1$
 $y = 1x - 1$
 $y = \underline{\underline{x - 1}}$

3. (a) $m = \frac{\text{rise}}{\text{run}} = \frac{9}{3} = \underline{\underline{3}}$
cuts $(0, -5)$ $c = -5$ $y = \underline{\underline{3x - 5}}$

(b) $m = \frac{\text{rise}}{\text{run}} = \frac{-2}{2} = \underline{\underline{-1}}$ cuts y-axis (0,2)
 $C = 2.$

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

(c) $y=0$ (doesn't cut y-axis)

$m = \text{undefined}$ (vertical lines are undefined)

$x=4$ (equation)

(d) $x=0$ (doesn't cut x-axis)

$m = 0.$

$y = -b$ (equation)

4. $y = x + 3$

x	-2	-1	0	1	2
y	1	2	3	4	5

Plot points

(-2,1) (-1,2) (0,3) (1,4)

(2,5) and join up with a straight line.

(1) when $x = -2$

$$y = -2 + 3 \Rightarrow 1$$

(2) when $x = -1$

$$y = -1 + 3 \Rightarrow 2$$

(3) when $x = 0$

$$y = 0 + 3 \Rightarrow 3$$

(4) when $x = 1$

$$y = 1 + 3 \Rightarrow 4$$

5 $A(2,3)$ $B(6,1)$
 $x_1 \ y_1 \quad x_2 \ y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 3}{6 - 2} = \frac{-2}{4} = -\frac{1}{2}$$

We need:
 • m
 • y-intercept
 for $\Rightarrow y = mx + c$

$$y = -\frac{1}{2}x + c$$

Sub in point B $(6,1)$
 $x \ y$

$$1 = -\frac{1}{2} \times 6 + c$$

$$1 = -3 + c$$

$$\underline{\underline{c = 4}}$$

$$\therefore y = -\frac{1}{2}x + \underline{\underline{4}}$$

b $3y = 6x - 21$

$$y = mx + c$$

$$\Rightarrow 3y = \frac{6x - 21}{3}$$

(both sides, all values)

$$\Rightarrow y = 2x - 7$$

$$y = \boxed{2}x + \boxed{-7}$$

$$c = -7$$

cuts y axis when
 at $(0, -7)$