SOLUTIONS

4. Given the points $(-2,-18)$ and $(1,-6)$. (x_2, y_2)

a) Find the slope of the straight line that goes through these two points.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-6-(-18)}{1-(-2)} = \frac{-6+18}{1+2} = \frac{12}{3} = 4$$

b) Set up the equation of the line in point-slope form.

$y - y_1 = m(x - x_1)$

$y - y_1 = 4(x - x_1)$ point $(-2, -18)$ (x_1, y_1)

$y + 18 = 4(x+2)$

alternatively : $(1,-6)$

$y + 6 = 4(x-1)$

c) Convert your equation from part (b) to slope-intercept form.

$y + 18 = 4(x+2)$

$y + 18 = 4x + 8$

$-18 \qquad -18$

$y = 4x - 10$

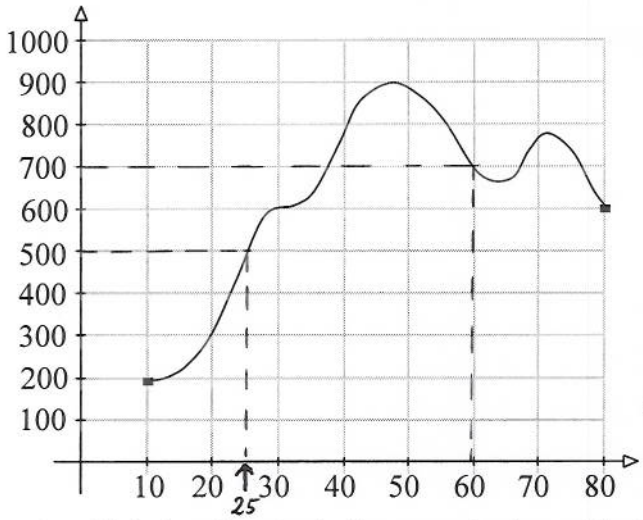
$y + 6 = 4x - 4$

$-6 \qquad -6$

$y = 4x - 10$

5. A hot-air balloon on a research mission is tracked for a certain amount of time by the instruments on the ground and its altitude above sea level recorded. The measurements started ten minutes into the experiment.

Altitude of hot air balloon (in feet above sea level)



a) Give the **domain** of the function.

$[10, 80]$

alternatively : $0 \le x \le 80$

alternatively : $\{x \in \mathbb{R} \mid 0 \le x \le 80\}$

b) Give an approximate **range** of the function.

$[200, 900]$

alternatively : $200 \le y \le 900$

alternatively : $\{y \in \mathbb{R} \mid 200 \le y \le 900\}$

d) At which time has the balloon reached an altitude of 500 feet?

After approximately 25 minutes

e) Which altitude is recorded at the 1 hour mark?

It is approximately 700 ft high.