

intensive mathematic

Final exam december 2019

question 6

a) Find $f(x) = x^2 + 2x - 3$ ~~$4 - 4 - 3$~~ I) $f(-2)$

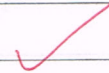
$$f(-2) = (-2)^2 + 2(-2) - 3$$

$$= -3$$

II) $f(0)$

$$= f(0) = (0)^2 + 2(0) - 3$$

$$= -3$$

III) $f(1)$

$$f(1) = (1)^2 + 2(1) - 3$$

$$= 0$$

b) draw graph $y = 2x$ for $-2 \leq x \leq 2$

$$x = -2 \quad x = 2$$

$$y = 2(-2)$$

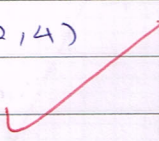
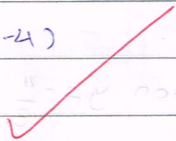
$$= -4$$

$$y = 2(2)$$

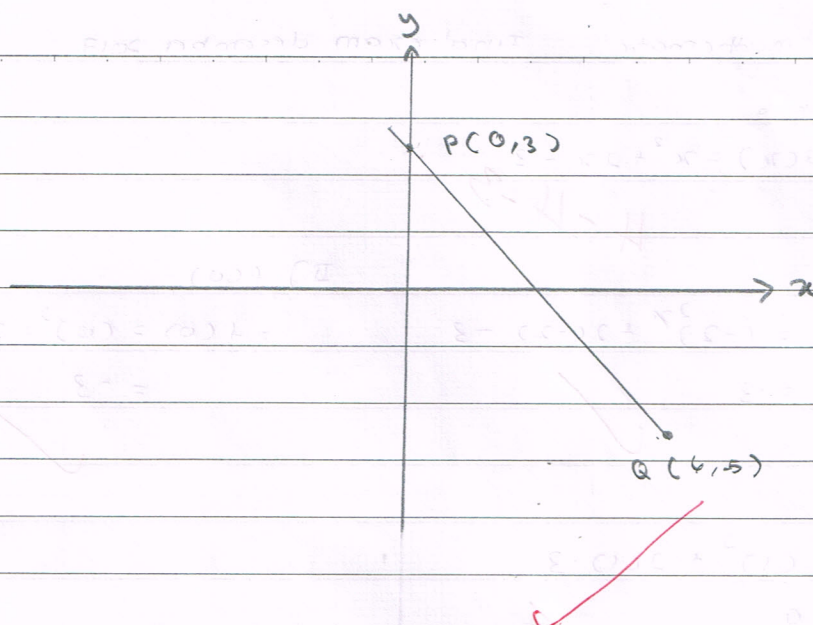
$$= 4$$

$$(-2, -4)$$

$$(2, 4)$$



c)



i) Find gradient PQ

$$\begin{array}{cc} x_2 & y_2 \\ P(0, 3) & Q(4, -5) \\ x_1 & y_1 \end{array}$$

$$\text{gradient} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-5 - 3}{4 - 0}$$

$$= \frac{-8}{4}$$

$$m = -\frac{2}{1}$$

ii) equation straight line

$$y = mx + c \quad \begin{array}{cc} x & y \\ P(0, 3) & \end{array}$$

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

$$3 = -\frac{2}{1}(0) + c$$

$$3 = c$$

$$c = 3$$

$$\therefore \text{equation } y = -\frac{2}{1}x + 3$$

iii) y-intercept PQ

$$= 3$$

iv) midpoint of PQ

$$\begin{array}{cc} x_1 & y_1 & x_2 & y_2 \\ P(0, 3) & & Q(4, -5) & \end{array}$$

$$\text{midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$= \left(\frac{0 + 4}{2}, \frac{3 + (-5)}{2} \right)$$

$$= \left(\frac{4}{2}, \frac{-2}{2} \right)$$

$$= (2, -1)$$