

Year 2 Term 2 Class Test (1)

Q1a)

$$y = 2x^2 - 10x + 8$$

① U-shape

$$② \quad 2x^2 - 10x + 8 = 0$$

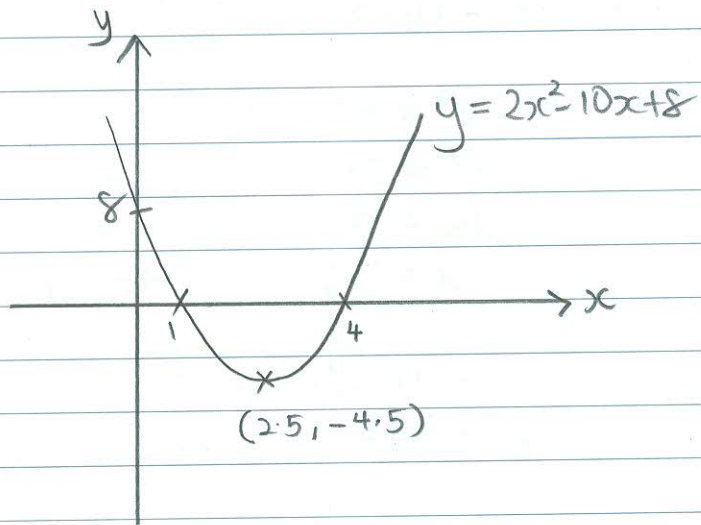
$$2(x^2 - 5x + 4) = 0$$

$$2(x-4)(x-1) = 0$$

$$x = 1 \text{ or } 4$$

③ y-intercept = 8

④ T-P = (2.5, -4.5)



b)

$$y = -x^2 - 6x - 5$$

① A-shape

$$② \quad -x^2 - 6x - 5 = 0$$

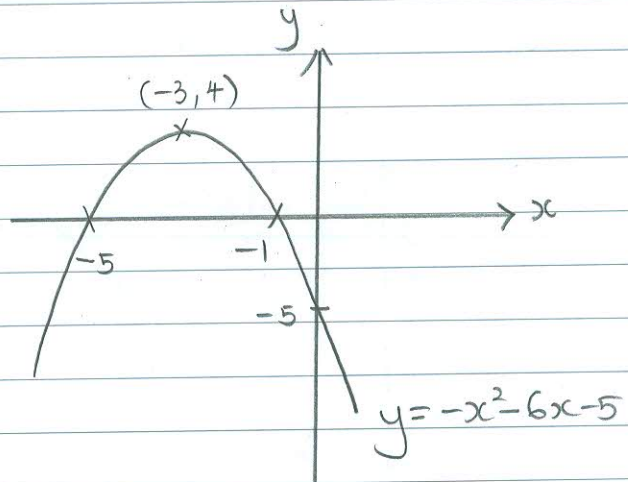
$$x^2 + 6x + 5 = 0$$

$$(x+5)(x+1) = 0$$

$$x = -1 \text{ or } -5$$

③ y-intercept = -5

④ T-P = (-3, 4)



Q2)

$$y = -x^2$$

$$\Rightarrow y = -(x+1)^2$$

$$\Rightarrow y = -(x+1)^2 + 5 \quad \#$$

Q3)

$$25^2 = (2x)^2 + x^2$$

$$25^2 = 5x^2$$

$$x^2 = 125$$

$$x = 5\sqrt{5} \text{ or } 11.2 \text{ units} \quad \#$$

Q4)

$$(14-x)^2 = (13-x)^2 + (6-x)^2$$

$$196 - 28x + x^2 = 169 - 26x + x^2 + 36 - 12x + x^2$$

$$x^2 - 10x + 9 = 0$$

$$(x-9)(x-1) = 0$$

$$x = 1 \text{ or } 9 \quad \#$$

$$\text{Q5)} \quad h^2 = 4^2 - x^2 \quad \text{--- (1)}$$

$$h^2 = 5^2 - (6-x)^2 \quad \text{--- (2)}$$

$$\Rightarrow 4^2 - x^2 = 5^2 - (6-x)^2$$

$$16 - x^2 = 25 - 36 + 12x - x^2$$

$$12x = 27$$

$$x = 2.25 \text{ or } \frac{9}{4} \text{ cm.}$$

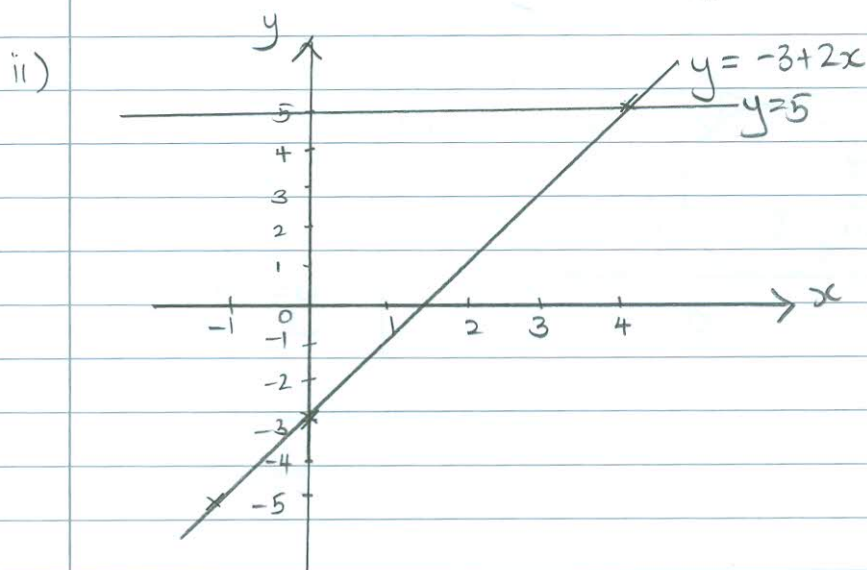
$$\therefore h^2 = 16 - (2.25)^2$$

$$h = \frac{5\sqrt{7}}{4} \text{ or } 3.31 \text{ cm} \#$$

$$\text{Q6i)} \quad y = -3 + 2x$$

when $x = -1$, $a = -3 + 2(-1)$

$$a = -5 \#$$



Scale: 1cm to 1unit (x-axis)
0.5cm to 1unit (y-axis)

iii) $(4, 5) \#$

$$\text{Q7a)} \quad 3y - x = 9$$

$$3y = x + 9$$

$$y = \frac{1}{3}x + 3$$

$$\therefore \text{Ans: } (0, 3) \#$$

b) Grad of $L_2 = \frac{1}{3}$

$$y = \frac{1}{3}x + C$$

$$\text{At } (0, -5), C = -5$$

$$y = \frac{1}{3}x - 5 \#$$

$$\begin{aligned}
 \text{Q8)} \quad & \frac{(16x^4y^2)^{\frac{1}{2}}}{12x^3y^5} \div \frac{(3x^2y^3)^{-2}}{x^{-2}y^{-4}} \\
 & = \frac{4x^2y}{12x^3y^5} \div \frac{3^{-2}x^{-4}y^{-6}}{x^{-2}y^{-4}} \\
 & = \frac{1}{3xy^4} \div \frac{x^{-2}y^{-2}}{9} \\
 & = \frac{1}{3xy^4} \times \frac{9^3}{x^{-2}y^{-2}} \\
 & = \frac{3}{x^{-1}y^2} = \frac{3x}{y^2} \quad (\text{positive indices only})
 \end{aligned}$$

$$\begin{aligned}
 \text{Q9)} \quad & 64 = 512^{x-1} \\
 & 2^6 = 2^{9(x-1)} \\
 & 6 = 9x - 9 \\
 & 9x = 15 \\
 & x = \frac{5}{3} \quad \#
 \end{aligned}$$

$$\begin{aligned}
 \text{Q10)} \quad & \text{Length}^2 = 20^2 + 15^2 + 10^2 \\
 & \text{Length} = 5\sqrt{29} \quad \text{or} \quad 26.9 \text{ cm} \dots
 \end{aligned}$$

$$\begin{aligned}
 \text{Q11)} \quad & \text{Diagonal of square} = \sqrt{4^2 + 4^2} \\
 & \text{Radius} = \frac{\sqrt{4^2 + 4^2} - 4}{2} \\
 & = -2 + 2\sqrt{2} \quad \text{or} \quad 0.828 \text{ cm} \quad \#
 \end{aligned}$$