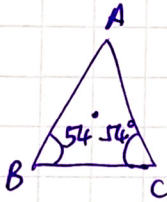
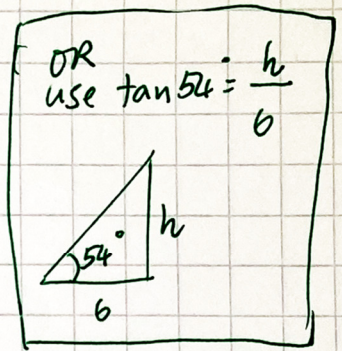


unit 13

Q1)



$$\angle BAC = 180^\circ - 54^\circ - 54^\circ = 72^\circ$$



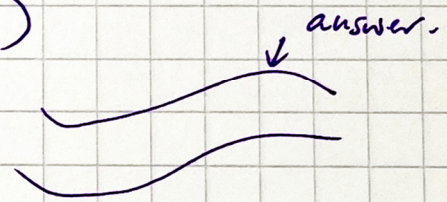
$$\text{(M1)} \quad \frac{AC}{\sin 54^\circ} = \frac{12}{\sin 72^\circ}$$

$$AC = 10.2078 \text{ (M1)}$$

$$\frac{1}{2} \text{(M1)} (10.2078)(10.2078) \sin 72^\circ = \underline{\underline{49.5}} \text{ (A1)}$$

Q2) (90, 0)

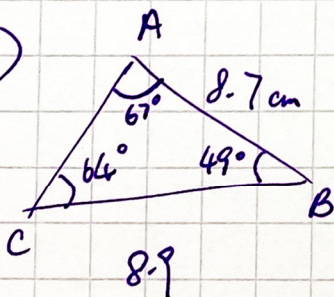
Q3) P (180, 0) Q (270, -1)



Q4) $y = \sin x^\circ + 2$

$y + 2$ shifted up by 2

Q5)



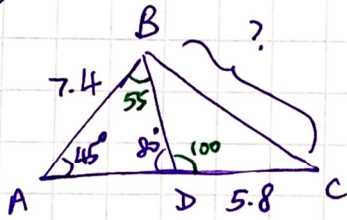
$$\angle CAB = 180^\circ - 64^\circ - 49^\circ = 67^\circ \text{ (M1)}$$

$$\frac{CB}{\sin 67} = \frac{8.7}{\sin 64} \text{ (M1)}$$

$$CB = 8.9 \text{ (M1)}$$

$$\frac{1}{2} (8.7)(8.9) \sin 49 \text{ (M1)} = \underline{\underline{29.3 \text{ cm}^2}} \text{ (A1)}$$

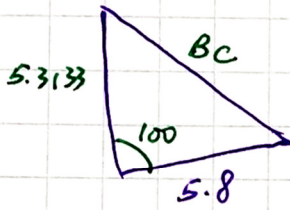
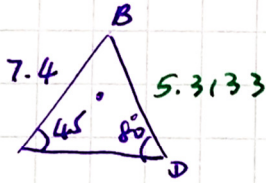
Q6)



$$\angle ABD = 180^\circ - 45^\circ - 80^\circ = 55^\circ$$

$$\frac{BD}{\sin 45^\circ} = \frac{7.4}{\sin 80^\circ} \quad (M1)$$

$$BD = 5.3133 \quad (M1)$$

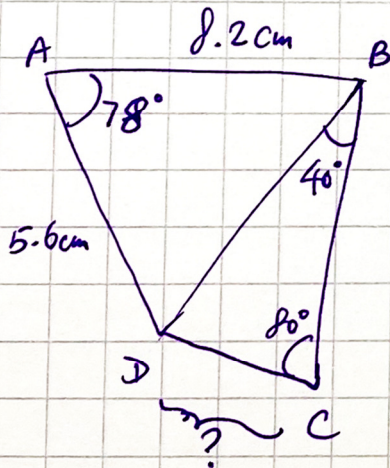


$$(M1) \quad BC^2 = 5.3133^2 + 5.8^2 - 2(5.3133)(5.8) \cos 100^\circ$$

$$(M1) \quad BC^2 = 72.57$$

$$(A1) \quad BC = \underline{\underline{8.52 \text{ cm}}}$$

Q8)



(M1) for cosine rule:

$$DB^2 = 8.2^2 + 5.6^2 - 2(8.2)(5.6) \cos 78^\circ$$

$$(M1) \quad DB^2 = 79.5054$$

$$(M1) \quad DB = 8.9166 \text{ cm}$$

$$(M1) \quad \frac{DC}{\sin 40^\circ} = \frac{8.9166}{\sin 80^\circ}$$

(M1)

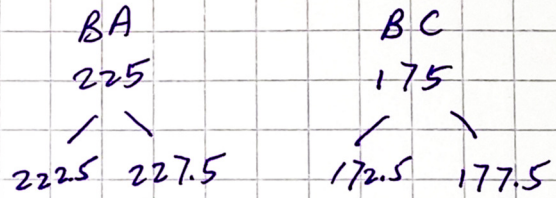
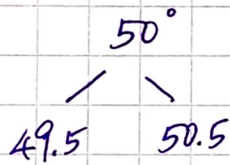
$$\frac{8.9166}{\sin 80^\circ} \times \sin 40^\circ$$

$$DC = \underline{\underline{5.82 \text{ cm}}}$$

(A1)

6 marks!!

Q10)



(B1) for 50.5 or 22.5 or 17.5

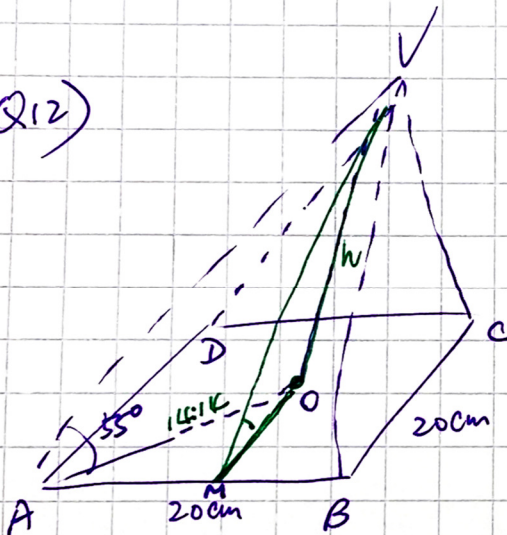
$$\frac{1}{2} ab \sin C \quad (UB)$$

$$= \frac{1}{2} (227.5)(177.5) \sin(50.5) \quad (M1)$$

$$= \underline{15579.58} \text{ m}^2 \quad (A1)$$

Range 15575 to 15580
using three correct upper Bounds.

Q12)



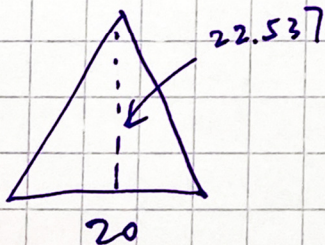
O is the centre of the square

$$AO = \sqrt{10^2 + 10^2} = 14.14 \quad (P1)$$

$$\tan 55^\circ = \frac{h}{14.14}$$

$$h = 20.1970 \quad (P1)$$

$$VM = \sqrt{10^2 + 20.1970^2} = 22.537 \quad (P1)$$



$$\frac{22.537 \times 20}{2} \times 4 + 20 \times 20$$

$$= 901.48 + 400$$

$$= \underline{1301.48} \text{ cm}^2 \quad (A1)$$