

$$8) \tan \theta = 2 \sin \theta$$

$$\frac{\sin \theta}{\cos \theta} = 2 \sin \theta$$

$$\sin \theta - 2 \sin \theta \cos \theta = 0$$

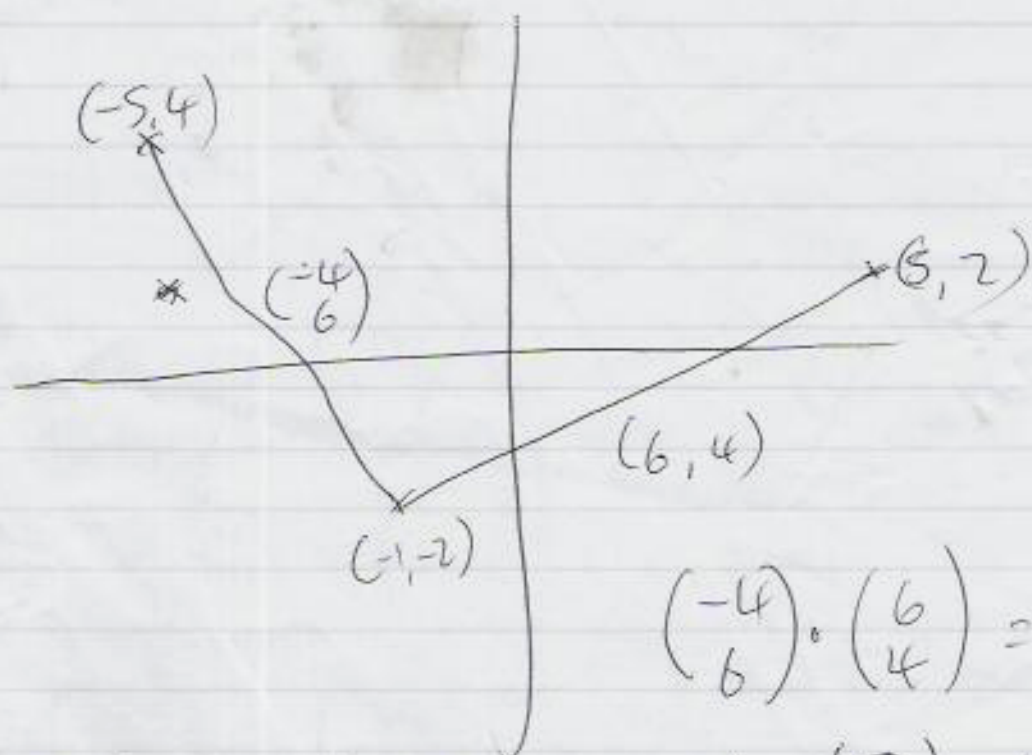
$$\sin \theta (1 - 2 \cos \theta) = 0$$

$$\sin \theta = 0 \Rightarrow \theta = 0, \pi, 2\pi$$

$$1 - 2 \cos \theta = 0 \Rightarrow \cos \theta = \frac{1}{2}$$

$$\therefore \theta = \frac{\pi}{3}, \frac{5\pi}{3}$$

9)



$$\begin{pmatrix} -4 \\ 6 \end{pmatrix} \cdot \begin{pmatrix} 6 \\ 4 \end{pmatrix} = 0$$

Other corner at  $\begin{pmatrix} 5 \\ 2 \end{pmatrix} + \begin{pmatrix} -4 \\ 6 \end{pmatrix} = \begin{pmatrix} 1 \\ 8 \end{pmatrix}$

$$\text{side of square} = \sqrt{(-4)^2 + 6^2} = \sqrt{52}$$

$$\text{Area} = \sqrt{52} \times \sqrt{52} = 52$$