

6 (a) (i) Show that $\cos \theta = \frac{1}{2}$ is one solution of the equation

$$6 \sin^2 \theta + 5 \cos \theta = 7$$

[2 marks]

6 (a) (ii) Find all the values of θ that solve the equation

$$6 \sin^2 \theta + 5 \cos \theta = 7$$

for $0^\circ \leq \theta \leq 360^\circ$

Give your answers to the nearest degree.

[2 marks]

6 (b) Hence, find all the solutions of the equation

$$6 \sin^2 2\theta + 5 \cos 2\theta = 7$$

for $0^\circ \leq \theta \leq 360^\circ$

Give your answers to the nearest degree.

[2 marks]