

**5 (a)** Determine a sequence of transformations which maps the graph of  $y = \cos \theta$  onto the graph of  $y = 3\cos \theta + 3\sin \theta$

Fully justify your answer.

**[6 marks]**

**5 (b)** Hence or otherwise find the least value and greatest value of

$$4 + (3\cos \theta + 3\sin \theta)^2$$

Fully justify your answer.

**[3 marks]**