

4i

$$\cos 2\theta = \sin \theta$$

$$(\text{As } \cos 2\theta = 1 - 2\sin^2 \theta)$$

$$1 - 2\sin^2 \theta = \sin \theta$$

$$0 = 2\sin^2 \theta + \sin \theta - 1$$

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

$$\text{either } 2\sin \theta - 1 = 0$$

$$\sin \theta = \frac{1}{2}$$

Within range $0 \rightarrow 2\pi$

$$\theta = 30^\circ \text{ or } 150^\circ$$

$$\text{or } \sin \theta + 1 = 0$$

$$\text{or } \sin \theta = -1$$

$$0^\circ, \text{ or } 180^\circ$$

In radians

$$\frac{\pi}{6} \text{ or } \frac{5\pi}{6} \text{ or } \pi \text{ or } 0$$