i. Find the value of $\sin 75°$.

ii. Hence deduce the value of $\cos 15°$.

Solution

$$\sin 75° = \sin(45° + 30°)$$

$$= \sin 45° \cos 30° + \cos 45° \sin 30°$$

$$= \frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2} + \frac{1}{\sqrt{2}} \times \frac{1}{2} = \frac{\sqrt{3}+1}{2\sqrt{2}}$$

$$\cos 15° = \sin(90° - 15°) = \sin 75°$$

$$\cos 15° = \frac{\sqrt{3}+1}{2\sqrt{2}}$$