

TRIGONOMETRY (Q 4 & 5, PAPER 2)

LESSON NO. 1: RIGHT-ANGLED TRIANGLES

2004

4 (a) A is an acute angle such that $\tan A = \frac{8}{15}$.

Without evaluating A , find

- (i) $\cos A$
- (ii) $\sin 2A$.

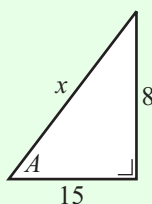
SOLUTION

4 (a)

Using Pythagoras:

$$x^2 = 8^2 + 15^2 \Rightarrow x^2 = 64 + 225$$

$$\Rightarrow x^2 = 289 \Rightarrow x = 17$$



$$\cos \theta = \frac{x}{r} = \frac{\text{Adjacent}}{\text{Hypotenuse}} \dots\dots \textcircled{1}$$

$$\tan \theta = \frac{y}{x} = \frac{\text{Opposite}}{\text{Adjacent}} \dots\dots \textcircled{3}$$

$$x^2 + y^2 = r^2 \dots\dots \textcircled{4}$$

$$\sin 2A = 2 \sin A \cos A \dots\dots \textcircled{13}$$

4 (a) (i)

$$\cos A = \frac{15}{17}$$

4 (a) (ii)

$$\sin 2A = 2 \sin A \cos A = 2 \times \frac{8}{17} \times \frac{15}{17} = \frac{240}{289}$$