Name: _____ 5-a-day Further Maths

9th November

Corbettmaths

Work out the value of $(2^{\frac{9}{2}} - 2^{\frac{1}{2}})^2$

$= 2^9 - 2 \times 2^{\frac{9}{2}} \times 2^{\frac{1}{2}} + 2$
$= 2^9 - 2^6 + 2$
$= 512 - 64 + 2$
$= 450$

Simplify this ratio fully

$$\sqrt{45} : \sqrt{320} : \sqrt{405}$$

$= 3\sqrt{5} : 8\sqrt{5} : 9\sqrt{5}$
$= 3 : 8 : 9$

AB is a diameter of a circle C.
Q is the centre of the circle

A has coordinates (–6, 13) and B has coordinates (8, 7).

Find the equation of C

Q = midpoint AB = (1, 10)
$r = AQ = \sqrt{7^2 + 3^2} = \sqrt{58}$
Eqt is $(x-1)^2 + (y-10)^2 = 58$

Solve $6\sin^2\theta + 7\cos\theta - 8 = 0$ for $0° \leq \theta \leq 360°$

$6(1 - \cos^2\theta) + 7\cos\theta - 8 = 0$
$\Rightarrow -6\cos^2\theta + 7\cos\theta - 2 = 0$
$\Rightarrow 6\cos^2\theta - 7\cos\theta + 2 = 0$
$\Rightarrow (2\cos\theta - 1)(3\cos\theta - 2) = 0$
$\Rightarrow \cos\theta = \frac{1}{2}, \frac{2}{3}$
$\Rightarrow \theta = 48.2°, 60°, 300°, 311.8°$