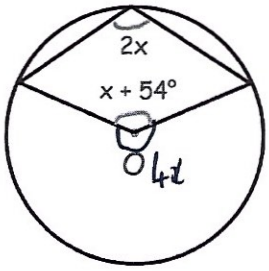
Name: _____ 5-a-day Further Maths

25th February

Corbettmaths



Work out the value of x

$5x + 54 = 360$

$5x = 306$

$x = 61.2°$

The coefficient of x^2 in the expansion of $(x+3)(x+c)(5x-2)$ is -17

Find the value of c

$(x^2 + cx + 3x + 3c)(5x - 2)$

$5x^3 - 2x^2 + 5cx^2 - 2cx + 15x^2 - 6x + 15cx - 6c$

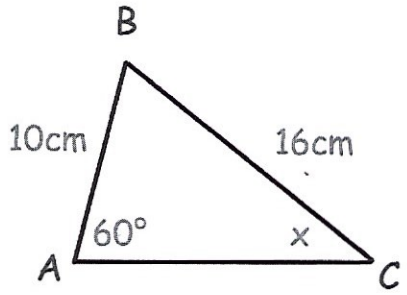
x^2 $\quad -2x^2 + 5cx^2 + 15x^2 = -17x^2$

$-2 + 5c + 15 = -17$

$5c + 13 = -17$

$5c = -30$

$c = -6$



Find the exact value of sin(x)

$\frac{\sin x}{10} = \frac{\sin 60}{16}$

$\sin x = \frac{10 \sin 60}{16}$

$\sin x = \frac{10 \times \frac{\sqrt{3}}{2}}{16}$

$\sin x = \frac{10\sqrt{3}}{32}$

$\sin x = \frac{5\sqrt{3}}{16}$

The curve C has equation

$$y = \frac{1}{3}x^3 - 2x^2 - 10x + 4$$

The point P has coordinates $(-3, 7)$

Another point Q also lies on C.
The tangent to C at Q is parallel to the tangent to C at P.

Find the x-coordinate of Q

7

$\frac{dy}{dx} = x^2 - 4x - 10$

$x = -3 \quad \frac{dy}{dx} = 11$

$x^2 - 4x - 10 = 11$

$x^2 - 4x - 21 = 0$

$(x - 7)(x + 3) = 0$

$x = 7$ or $x = -3$ ← P

↑ Q