

2nd September

Corbettmaths

$(x + 2)$ is a factor of
 $x^3 - 6x^2 - 9x + a = f(x)$

Work out the value of a

$$f(-2) = -8 - 24 + 18 + a = 0$$

$$\Rightarrow a - 14 = 0$$

$$\Rightarrow \underline{a = 14}$$

The first five terms of a sequence are shown below.

$-8, -3, 4, 13, 24 \dots$
 $\begin{matrix} 5 & 7 \\ 2 & \end{matrix}$

Work out an expression for the n th term of the sequence

$$t(n) = an^2 + bn + c$$

$$a + b + c = -8$$

$$3a + b = 5$$

$$2a = 2 \Rightarrow a = 1$$

$$3 + b = 5 \Rightarrow b = 2$$

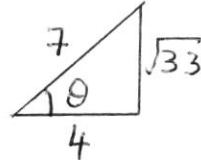
$$1 + 2 + c = -8 \Rightarrow c = -11$$

$$\underline{t(n) = n^2 + 2n - 11}$$

Angle θ is obtuse and $\sin \theta = \frac{\sqrt{33}}{7}$

Work out the value of $\cos \theta$

$$90^\circ < \theta < 180^\circ \Rightarrow \cos \theta < 0$$



$$\underline{\cos \theta = -\frac{4}{7}}$$

Work out the equation of the normal to the curve $y = 2x^2 - 4x + 5$ at the point $(2, 5)$

Give your answer in the form
 $y = mx + c$

$$\frac{dy}{dx} = 4x - 4$$

$$x = 2 \Rightarrow \frac{dy}{dx} = 4$$

$$\text{Normal is } y - 5 = -\frac{1}{4}(x - 2)$$

$$\Rightarrow y - 5 = -\frac{1}{4}x + \frac{1}{2}$$

$$\Rightarrow \underline{y = -\frac{1}{4}x + \frac{11}{2}}$$