

5th January



Corbettmaths

Expand and simplify fully

$$(x + 1)(x + 2)(x + 4)$$

$$(x^2 + 3x + 2)(x + 4)$$

$$x^3 + 4x^2 + 3x^2 + 12x + 2x + 8$$

$$x^3 + 7x^2 + 14x + 8$$

The first five terms of a sequence are shown below.

$$200, 196, 190, 182, 172 \dots$$

$$\begin{matrix} -4 & -6 & -8 & -10 \\ -2 & -2 & -2 & \end{matrix}$$

Work out an expression for the nth term of the sequence

$$2a = -2$$

$$a = -1$$

$$3a + b = -4$$

$$-3 + b = -4$$

$$b = -1$$

$$a + b + c = 200$$

$$-1 - 1 + c = 200$$

$$c = 202$$

$$-n^2 - n + 202$$

$$y = \frac{4}{5}x^{10} + 2x^7$$

Work out $\frac{dy}{dx}$

$$\frac{dy}{dx} = 8x^9 + 14x^6$$

Prove

$$\cos^2 x - 2\sin^2 x \equiv 3\cos^2 x - 2$$

LHS $\cos^2 x - 2(1 - \cos^2 x)$

$$\cos^2 x - 2 + 2\cos^2 x$$

$$3\cos^2 x - 2 \quad \text{QED}$$

Hence, work out the values of x between 0° and 360° for which

$$\cos^2 x - 2\sin^2 x = 0$$

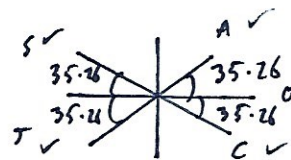
$$3\cos^2 x - 2 = 0$$

$$3\cos^2 x = 2$$

$$\cos^2 x = \frac{2}{3}$$

$$\cos x = \pm \sqrt{\frac{2}{3}}$$

$$x = 35.26$$



$$x = 35.26^\circ, 144.74^\circ, 215.26^\circ, 324.74^\circ$$