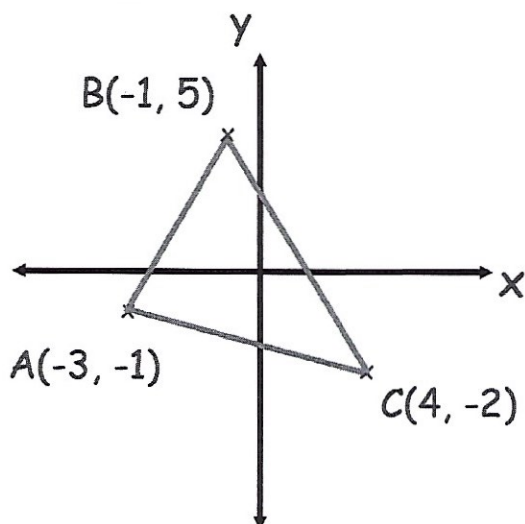


8th February



Corbettmaths



Calculate the perimeter of ABC

$$AB^2 = 2^2 + 6^2 \quad AB = \sqrt{40}$$

$$BC^2 = 5^2 + 7^2 \quad BC = \sqrt{74}$$

$$AC^2 = 7^2 + 1^2 \quad AC = \sqrt{50}$$

$$\begin{aligned} \text{Perimeter} &= 2\sqrt{10} + \sqrt{74} + 5\sqrt{2} \\ &= 21.9988 \\ &= 21.998 \end{aligned}$$

Solve the simultaneous equations

$$\begin{aligned} x + y + z &= 1 & \text{--- (1)} \\ 2x + 2y + 2z &= 2 & \text{--- (2)} \\ 4x - 3y + 4z &= 32 & \text{--- (3)} \\ x - 10y - 2z &= 27 & \text{--- (4)} \end{aligned}$$

$$(1) + (2) = 3x + 3y + 3z = 3 \quad \text{--- (5)}$$

$$2 \times (2) \Rightarrow 2x + 2y + 4z = 4 \quad \text{--- (6)}$$

$$(3) + (6) = 6x - 23y + 8z = 36 \quad \text{--- (7)}$$

$$2 \times (5) \Rightarrow 6x + 6y + 6z = 6 \quad \text{--- (8)}$$

$$(7) - (6) \Rightarrow 7y = -28$$

$$y = -4$$

$$x = -1$$

$$z = 6$$

A curve has equation $y = \frac{2}{3}x^3$

The gradient of the curve at the points P and Q are equal to 18

Work out the coordinates of the points P and Q.

$$\frac{2}{3} \times 3^3 = 18$$

$$\begin{aligned} \frac{dy}{dx} &= 2x^2 & 2x^2 &= 18 \\ & & x^2 &= 9 \\ & & x &= \pm 3 \end{aligned}$$

$$(-3, -18) \text{ and } (3, 18)$$