

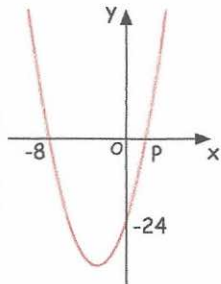
**23rd June**

Corbettm0ths

Below is a sketch of the graph

$$y = x^2 + bx + c$$

The curve passes through the points  $(-8, 0)$ ,  $(0, -24)$  and  $(P, 0)$



Work out the coordinates of the turning point of the graph.

$$y = (x + 8)(x - 3)$$

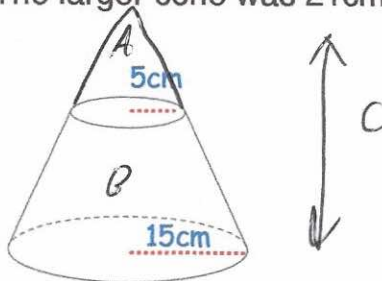
$$y = x^2 + 5x - 24$$

$$\left(x + \frac{5}{2}\right)^2 - \frac{25}{4} - 24$$

$$\left(x + \frac{5}{2}\right)^2 - 30\frac{1}{4}$$

$$(-2.5, -30.25)$$

A frustum is made from cutting a small cone from the top of a larger cone. The larger cone was 21cm tall.



Calculate the volume of the frustum

$$\begin{aligned} \text{(A)} \quad & \frac{1}{3} \times \pi \times 5^2 \times 7 \\ & = 183.259\dots \end{aligned}$$

$$\begin{aligned} \text{(B)} \quad & \frac{1}{3} \times \pi \times 15^2 \times 21 \\ & = \frac{1}{3} (14844.02529) \\ & = 4948.008429 \end{aligned}$$

$$4948.008429 - 183.259\dots$$

$$4764.749\text{cm}^3$$

Find the equation of the line perpendicular to  $x + 4y - 6 = 0$  and passing through  $(1, 8)$

$$\begin{aligned} 4y &= 6 - x \\ y &= -\frac{1}{4}x + 1.5 \end{aligned}$$

$$y = 4x + c$$

$$8 = 4 + c$$

$$c = 4$$

$$y = 4x + 4$$