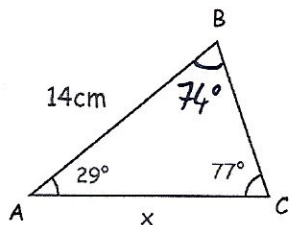




4th February



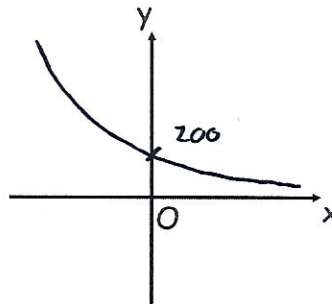
Find the length of the side AC.

$$\frac{x}{\sin 74} = \frac{14}{\sin 77}$$

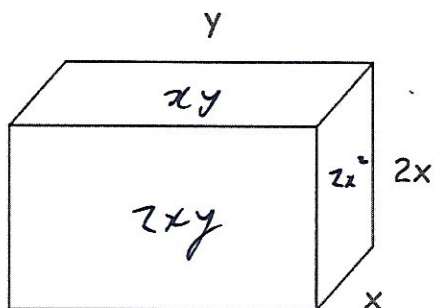
$$x = 13.8117 \text{ cm}$$

Sketch the graph of $y = 200 \times 2^{-x}$

Label the coordinates of any points of intersection with the coordinate axes.



Shown below is a cuboid.

The surface area of the cuboid is 120cm^2 .The volume of the cuboid is V .

$$SA = 4x^2 + 6xy$$

$$4x^2 + 6xy = 120$$

$$6xy = 120 - 4x^2$$

$$y = \frac{20}{x} - \frac{2x}{3}$$

$$\text{Show that } y = \frac{20}{x} - \frac{2x}{3}$$

$$\text{Show that } V = 40x - \frac{4}{3}x^3$$

$$V = 2x^2y$$

$$V = 2x^2 \left[\frac{20}{x} - \frac{2x}{3} \right]$$

$$V = \frac{40x^2}{2} - \frac{4x^3}{3} \quad V = 40x - \frac{4}{3}x^3$$

Use differentiation to find the value of x for which V is a maximum $\rightarrow \frac{dV}{dx} = 0$

$$\frac{dV}{dx} = 40 - 4x^2$$

$$40 - 4x^2 = 0$$

$$x^2 = 10$$

$$x = \sqrt{10}$$