



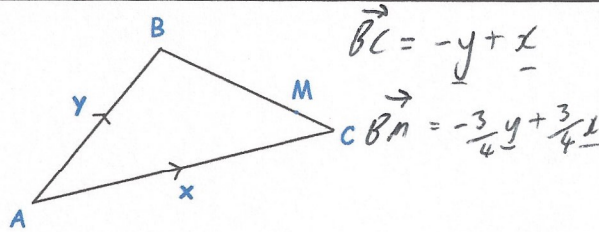
10th October

Write down the exact value of
 $\tan 30^\circ + \tan 60^\circ$

$$\frac{\sqrt{3}}{3} + \frac{\sqrt{3}}{1}$$

$$\frac{\sqrt{3}}{3} + \frac{3\sqrt{3}}{3}$$

$$= \frac{4\sqrt{3}}{3}$$



ABC is a triangle.
M lies on BC such that $BM = \frac{3}{4} BC$

Express \vec{AM} in terms of x and y

$$\vec{AM} = \vec{AB} + \vec{BM}$$

$$= \underline{y} + \left(-\frac{3}{4} \underline{y} + \frac{3}{4} \underline{x} \right)$$

$$= \underline{\frac{1}{4} y} + \underline{\frac{3}{4} x}$$

Solve the simultaneous equations

$$x^2 + y^2 = 13$$

$$x - 2y = 1 \quad x = 2y + 1$$

$$(2y + 1)^2 + y^2 = 13$$

$$4y^2 + 4y + 1 + y^2 = 13$$

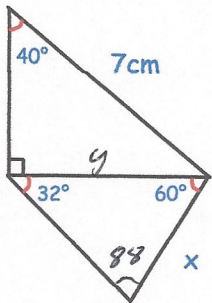
$$5y^2 + 4y - 12 = 0$$

$$(5y - 6)(y + 2) = 0$$

$$y = \frac{6}{5} \text{ or } y = -2$$

$$x = 3.4 \quad x = -3$$

$$(3.4, 1.2) \quad (-3, -2)$$



SOH

$$\sin(40) \times 7$$

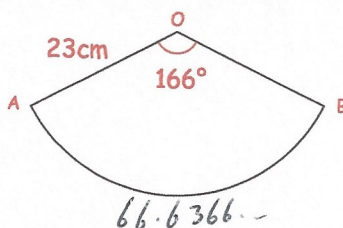
$$4.4995 \dots$$

Find x

$$\frac{y}{\sin 88} = \frac{x}{\sin 32}$$

$$\frac{4.4995}{\sin 88} = \frac{x}{\sin 32}$$

$$x = 2.386 \text{ cm}$$



$$\frac{166}{360} \times \pi \times 23^2$$

$$= 66.636 \dots$$

$$d = \frac{66.636}{\pi}$$

$$r = 10.6$$

Shown is sector OAB of circle centre O.
OA and OB are joined to make a cone.
Calculate the volume of the cone.

$$h^2 = 23^2 - 10.6^2$$

$$h = 20.409$$

$$\frac{1}{3} \times \pi \times 10.6^2 \times 20.409$$

$$= 2401.387 \text{ cm}^3$$