



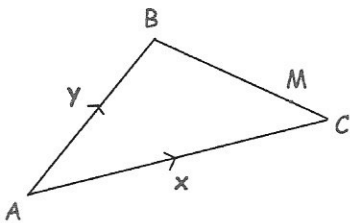
Write down the exact value of

$\tan 30^\circ + \tan 60^\circ$

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

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

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



ABC is a triangle.

M lies on BC such that $BM = \frac{3}{4} BC$

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

$$\vec{BC} = -y + x \quad \vec{BM} = -\frac{3}{4}y + \frac{3}{4}x$$

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

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

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

Solve the simultaneous equations

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

$$x - 2y = 1$$

$$x = 2y + 1$$

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

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

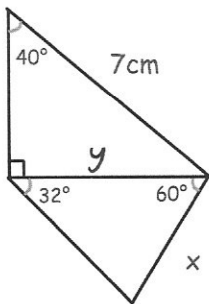
$$5y^2 + 4y - 12 = 0$$

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

$$y = \frac{6}{5} \quad y = -2$$

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

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



SOH

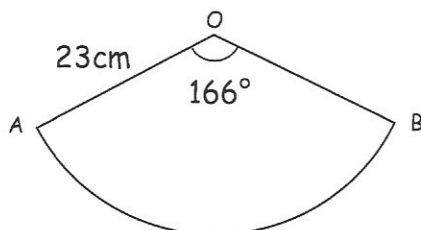
$$y = \sin(40) \times 7$$

$$= 4.4995...$$

Find x

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

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

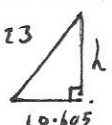


$$\frac{166}{360} \times \pi \times 23^2 = 766.3217...$$

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

$$\frac{1}{3} \times \pi \times 10.605^2 \times 20.40887531$$

$$2403.9 \text{ cm}^3$$



$$r = 10.605 \text{ cm}$$

$$h = \sqrt{23^2 - 10.605^2} = 20.40887531$$