

2. Solve each equation, for  $0 \leq \theta < 360$ .

(3 mks each)

a)  $\cos \theta = -\frac{\sqrt{3}}{2}$

$$\theta = \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$$

$$\theta_r = 30^\circ$$

$$Q2: \theta = 180 - 30 = \text{AND } 150^\circ$$

$$Q3: \theta = 180 + 30 = 210^\circ$$

b)  $\sin \theta = 0.4571$

$$\theta_r = \sin^{-1}(0.4571)$$

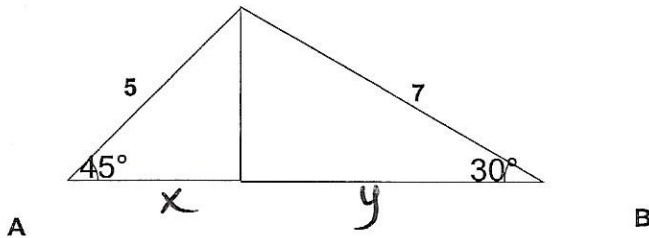
$$\theta_r = 27^\circ$$

$$Q1: \theta = 27^\circ$$

$$Q2: \theta = 180 - 27 = 153^\circ$$

3. Determine the exact length of AB in the diagram below.

(4 marks)



$$\cos 45 = \frac{x}{5} \quad \left. \begin{array}{l} \cos 30 = \frac{y}{7} \end{array} \right\}$$

$$\frac{\sqrt{2}}{2} = \frac{x}{5}$$

$$\frac{\sqrt{3}}{2} = \frac{y}{7}$$

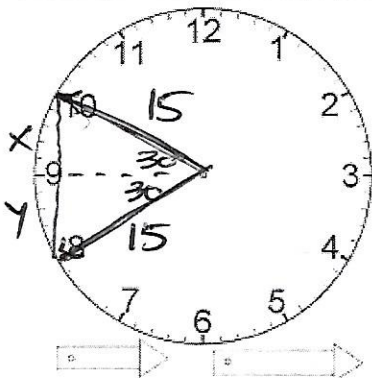
$$\frac{5\sqrt{2}}{2} = x$$

$$\frac{7\sqrt{3}}{2} = y$$

$$\therefore AB = \frac{5\sqrt{2}}{2} + \frac{7\sqrt{3}}{2} = \frac{5\sqrt{2} + 7\sqrt{3}}{2}$$

4. A clock has a minute hand that is 15cm long. Draw a diagram and determine the exact vertical distance between the tip of the minute hand between the times 8:40 am and 8:50 am.

(4 mks)



$$\sin 30 = \frac{x}{15}$$

$$\sin 30 = \frac{y}{15}$$

$$\frac{1}{2} = \frac{x}{15}$$

$$\frac{1}{2} = \frac{y}{15}$$

$$\frac{15}{2} = x$$

$$\frac{15}{2} = y$$

$$\therefore x + y = \frac{15}{2} + \frac{15}{2} = \frac{30}{2} = 15$$

OR EQUILATERAL  $\Delta$

All sides 15

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