Test Yourself 2

A Questions

Q1. Area $= \frac{1}{2} ab \sin C$

Area $= \frac{1}{2}(8)(9)\sin(40)$

Area $= 23.1 \text{ cm}^2$

Q2 $\tan\theta = -\frac{1}{\sqrt{3}}$ $\quad 0 \leq \theta \leq 360$

ref Angle is $30°$

Sols ① $\theta = 180 - 30 = 150°$

② $\theta = 360 - 30 = 330°$

Q3

Area $= \frac{1}{2} r^2 \theta$ (in radians)

(2) $\theta = 360 - 30 = 330°$

Q3

Area $= \frac{1}{2} r^2 \theta$ (in radians)

$240 = \frac{1}{2} \times (20)^2 \times \theta$

$240 = 200\theta$

$\frac{240}{200} = \theta$

$\frac{6}{5} = \theta$ $\quad \theta = 6/5$ radians.

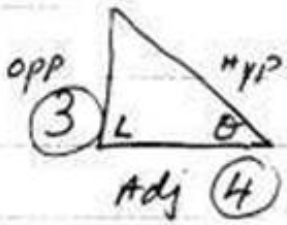
(ii) $\text{arc} = r\theta$

$\text{arc} = 20\left(\frac{6}{5}\right)$

$\text{arc} = 24$ cm

Q4 $\tan\theta = 3/4$ Area $= \frac{1}{2}ab\sin C$.

no cal $\Rightarrow$ stretch to find $\sin\theta$.



$\Rightarrow$ Hyp $= 5$ $\Rightarrow \sin\theta = \frac{3}{5}$.

$$\text{Area} = \tfrac{1}{2}(8)(7)(3/5)$$

$$\text{Area} = 84/5 = 16\,4/5 \text{ cm}^2$$

Q5 Period $= 180°$ Range $= [-2, 2]$

$$y = a\sin bx$$

$$y = 2\sin 2x.$$

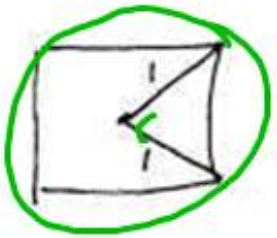
Q6

area of circle $= \pi r^2$

$\pi = \pi r^2$

$1 = r^2$

$1 = r$.



Side of sq is $x^2 = 1^2 + 1^2$

$x = \sqrt{2}$.

Area of sq $= \sqrt{2} \times \sqrt{2} = 2$ sq units

Q7 $\sin\theta = -3/5$ $\cos\theta = 4/5$.

$$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{-3/5}{4/5} = -3/5 \times 5/4 = -3/4.$$

$\tan\theta = -3/4$.

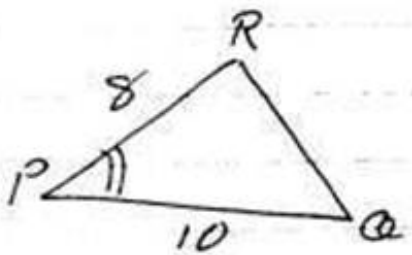
OR

$\sin\theta = \frac{-3}{5}$ $\frac{\text{opp}}{\text{Hyp}}$ $\cos\theta = 4/5$ $\frac{\text{Adj}}{\text{Hyp}}$

$$\tan\theta = \frac{\text{opp}}{\text{Adj}} = \frac{-3}{4}.$$

Q8

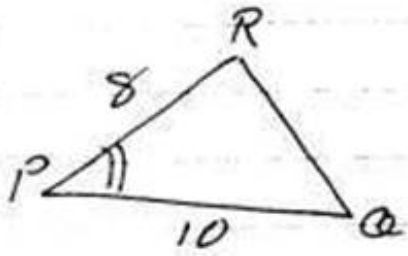
Area $= 20\text{cm}^2$



Area $= \frac{1}{2}ab\sin C$

Q8

Area = 20 cm²



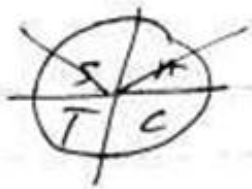
Area = $\frac{1}{2}$ ab Sin C.

$20 = \frac{1}{2}(8)(10)\ \text{Sin}\ P.$

$20 = 40\ \text{Sin}\ P$

$\frac{20}{40} = \text{Sin}\ P$

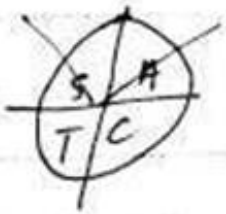
$\frac{1}{2} = \text{Sin}\ P$



ref Angle is 30° ⇒ 2 sols ① 30°
② 150°

Q9 $4\sin\theta = 3$ $\quad 0 \leq \theta \leq 360$

$\sin\theta = 3/4$.



ref angle is $\sin^{-1}(3/4) = 49°$.

Sols: ① $49°$ ② $180 - 49 = 131°$

Q10

Area $= \frac{1}{2}ab\sin C$

$14\sqrt{3} = \frac{1}{2}(7)(8)\sin C$

$14\sqrt{3} = 28\sin C$

$\frac{14\sqrt{3}}{28} = \sin C$

$\sqrt{3}/2 = \sin C$ $\Rightarrow$ $C = 60°$

$\Rightarrow \cos\theta = 1/2$.