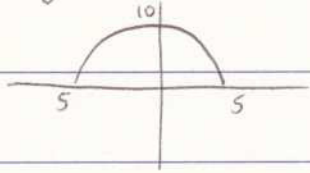


Part A Q5

$$(a). \quad y = 2\sqrt{25-x^2}$$



$$\text{Domain} = -5 \leq x \leq 5$$

$$\text{Range} = 0 \leq y \leq 10$$

$$\text{when } x=0 \quad y = 2\sqrt{25} \\ = 10$$

Part B

$$(b). \quad (i). \quad \log_{10}(2^{1000}) = 1000 \log_{10} 2$$

$$= 301.0299957$$

$$= 301.030 \text{ (3dp)}$$

$$(ii). \quad 2^{10} = 1024$$

$$10^3 = 1000$$

$$2^{10^3}$$

$$\text{Digits} = 10$$

Part C

$$(c) \quad l = r\theta$$

$$8 = r \left(\frac{\pi}{6} \right)$$

$$30^\circ = 30 \times \frac{\pi}{180}$$

$$= \frac{\pi}{6}$$

$$r = \frac{l}{\theta}$$

$$= \frac{8}{\frac{\pi}{6}}$$

$$= \frac{8}{1} \times \frac{6}{\pi}$$

$$= \frac{48}{\pi} \text{ cm.}$$



Part D

(d). Trapezoidal Rule = $\frac{b-a}{2} [f(a) + f(b)]$

$$\text{Area} = \frac{4-0}{2} [0 + 1.3] + \frac{8-4}{2} [1.3 + 1.7] + \frac{12-8}{2} [1.7 + 0]$$

$$= 2(1.3) + 2(3) + 2(1.7)$$

$$= 12 \text{ units}^2 = 12 \text{ metres}^2$$

(ii) $v = \frac{s}{t} \quad 0.5 =$

$$V = 12 \times 5 \quad \text{ms}^{-1} = 1.38 \times 10^{-4} \text{ m/h}^{-1}$$
$$= 60 \text{ metres}^3/\text{s}^{\text{nd}}$$

$$V = 12 \times 1.38 \times 10^{-4}$$

=

$$1 \text{ hr} = 216000 \text{ seconds}$$

$$V = 216000 \cdot d$$

$$(216000)(12) = d$$

$$d = 2592000$$

$$= 60 \times 60 \times 60$$

$$= 216000 \text{ m}^3$$