

Quest (5)

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

$$y = 2(25 - x^2)^{1/2}$$

~~range = 5 to 15~~

domain = ~~y is not~~

$$0 = 2(25 - x^2)^{1/2}$$

$$0 = \sqrt{(50 - 2x^2)^{1/2}}$$

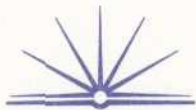
$$2x^2 = 50$$

$$x^2 = 25$$

$$x = \pm 5$$

$$-5 \leq x \leq 5$$

range = ???



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

$$= \ln 1000 \times 2 \dots$$

$$= 13.816$$

ii). 10 numerals.

c). $l = r\theta$ when θ is in radians.

$$30 \times \frac{\pi}{180} = \frac{\pi}{6}$$

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

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

$$r = 15.278875$$

$$\therefore r = 15 \text{ mm.}$$

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

from 0 to 4.

$$= 4-0 \left(\frac{0 + 1.3}{2} \right)$$

$$= 4 \left(\frac{1.3}{2} \right)$$

$$= 2.6.$$

from 4 to 8.

$$= 8-4 \left(\frac{1.3 + 1.7}{2} \right)$$

$$= 4 \left(\frac{3}{2} \right)$$

$$= 6.$$

from 8 to 12.

$$= 12-8 \left(\frac{1.7 + 0}{2} \right)$$

$$= 4 \left(\frac{1.7}{2} \right)$$

$$= 3.4.$$

Add Areas. $2.6 + 6 + 3.4 = 12u^2$

$$\therefore A = 12u^2.$$

ii). $V = \pi \int (y^2) dx$.

0.5 ms^{-1} = acceleration.

velocity = speed.

$\int (0.5) dx = \frac{30}{60} x$ for per hour
or ~~the~~ $30x$.

to get y^2

$\int (\frac{1}{2} x) dx = x^{\frac{30}{2}}$

for y^2 when $y = x^{30}$

$y^2 = (x^{30})^2$

$y^2 = x^{60}$

$V = \pi \int_0^{12} (x) dx = \left[\frac{x^2}{2} \right]_0^{12}$

$\frac{(12)^2}{2} - \frac{(0)^2}{2} = 72$

I just realised per hour.

fixing