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

domain $\quad 2\sqrt{25-x^2} = 0 \qquad\qquad \sqrt{25-x^2} \geqslant 0$

$\quad 2(5-x) = 0 \qquad\qquad \pm 5 - x \geqslant 0$

$\quad 10 - 2x = 0 \qquad\qquad 5 \geqslant, \ominus x$

$\quad 10 = 2x \qquad\qquad\qquad x \leqslant 5$

$\quad x = 5 \qquad\qquad\qquad 5 \leqslant x \leqslant 5$

range $(x=0)$

$\quad y = 2\sqrt{25}$

$\quad = 2 \pm 5$

$\quad = 7 \text{ or } -3$

$\quad 7 \geqslant y \geqslant -3$

domain: all real except $x=5$

$\quad$ all real $-5 \leqslant x \leqslant 5$

range: all real $-3 \leqslant y \leqslant 7$

b) $\quad \log_{10}(z^{1000}) =$

c) radius $= r\theta$ $\quad$ $\dfrac{360}{30} = 10 \times 8$

$\quad r = \dfrac{8}{30}$ $\qquad$ $= 96$ cm

$\quad = $ $\qquad\qquad$ $=$ circumference

$\qquad\qquad\qquad\qquad = 2\pi r$

circumference of $30° = 8$ cm $\qquad \dfrac{96}{2\pi} = r$

$\therefore$ circumference of $360° = 96$ cm $\qquad \dfrac{48}{\pi} = r$

circumference $= 2\pi r$ $\qquad\qquad 15.27 =$

$\quad 96 = 2\pi r$

$\quad \dfrac{96}{2\pi} = r$

$\quad \dfrac{48}{\pi} = r$

$\quad r = 15.2788745\overline{4}$ cm

$\quad \doteqdot 15.28$ cm

d) i) $\qquad \doteqdot \dfrac{h}{2}\left(f(3) + f(4) + 2f(c) + 4(3) \right)$ $\quad h = \dfrac{b-a}{2}$

$\qquad\qquad\qquad\qquad\qquad = \dfrac{12-0}{3}$

$\qquad \doteqdot 2\left((0+0) + (1.3\times 4) + (1.7\times 2) \right) = 4$

$\qquad \doteqdot 2(2.6 + 3.4)$

$\qquad \doteqdot 12\ m^2$
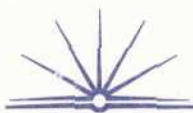
11) $A = 12 \, m^2$

$0.5 \, ms^{-1}$

$\times 60 \, sec$

$= 30 \, m/min$

$\times 60$

$= 1800 \, m/\cancel{min} \, hr$

$= 1.8 \, L/\cancel{min} \, hr$

$\times 12 \, m^2$

$= 21.6 \, L/hr$