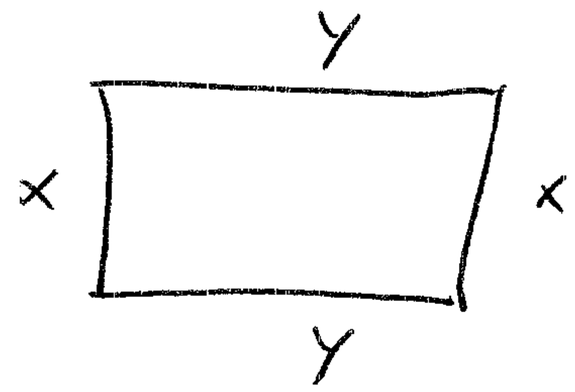
Calc 1.1

#44



$A = 16\ m^2$

$P = 2x + 2y$

$A = 16 = xy$

$y = \frac{16}{x}$

$\therefore P = 2x + 2y = 2x + 2\left(\frac{16}{x}\right)$

$P = 2x + \frac{32}{x}$

#46

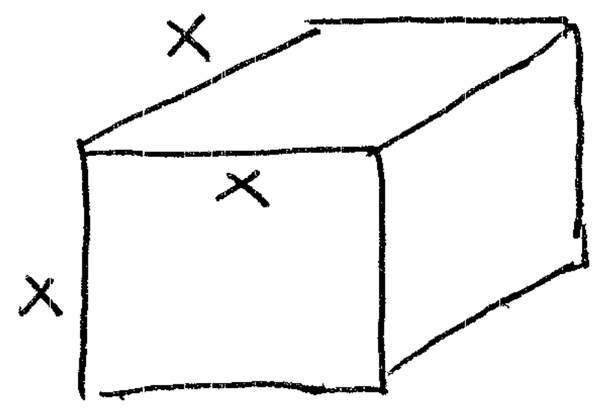
$A(\text{surface}) = x^2 \cdot 6$

$= 6x^2$

$\text{Volume} = x^3$

$V = x^3$

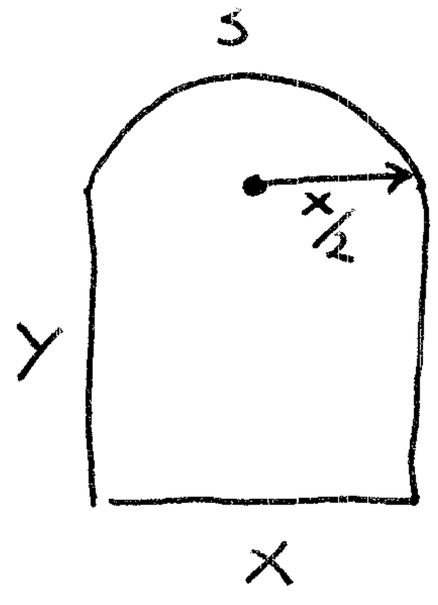
$x = \sqrt[3]{V}$



$\therefore A_s = 6x^2 = 6\left(\sqrt[3]{V}\right)^2$

Calc 1.1

#48



$P = 30ft$

$= x + 2y + s$

where s is the length of the arc

$s = \frac{1}{2}$ Circumference of circle w radius $x/2$

$s = \frac{1}{2}(2\pi r) = \frac{1}{2}(2\pi \frac{x}{2}) = \frac{1}{2}\pi x$

$\therefore P = x + 2y + \frac{1}{2}\pi x$

Now Area $= xy + \frac{1}{2}\pi r^2$ ← $\frac{1}{2}$ area of circle

$= xy + \frac{1}{2}\pi\left(\frac{x}{2}\right)^2$ $r = x/2$

$= xy + \frac{1}{8}\pi x^2$

But what is y?

from $P = x + 2y + \frac{1}{2}\pi x$ we can solve for y.

$P = 30 = x + 2y + \frac{1}{2}\pi x$

$30 - x - \frac{1}{2}\pi x = 2y$

$y = \frac{30 - x - \frac{1}{2}\pi x}{2} = 15 - \frac{x}{2} - \frac{1}{4}\pi x$

$\therefore A = x\left(15 - \frac{x}{2} - \frac{1}{4}\pi x\right) + \frac{1}{8}\pi x^2$

$=$

Can be simplified - But this it!

Calc 1.1

#50

$V = x(20-2x)(12-2x)$

height · length · width

$= (20x - 2x^2)(12-2x)$

$= 240x - 40x^2 - 24x^2 + 4x^3$

$V = 4x^3 - 64x^2 + 240x$

$0 < x < 12/2$