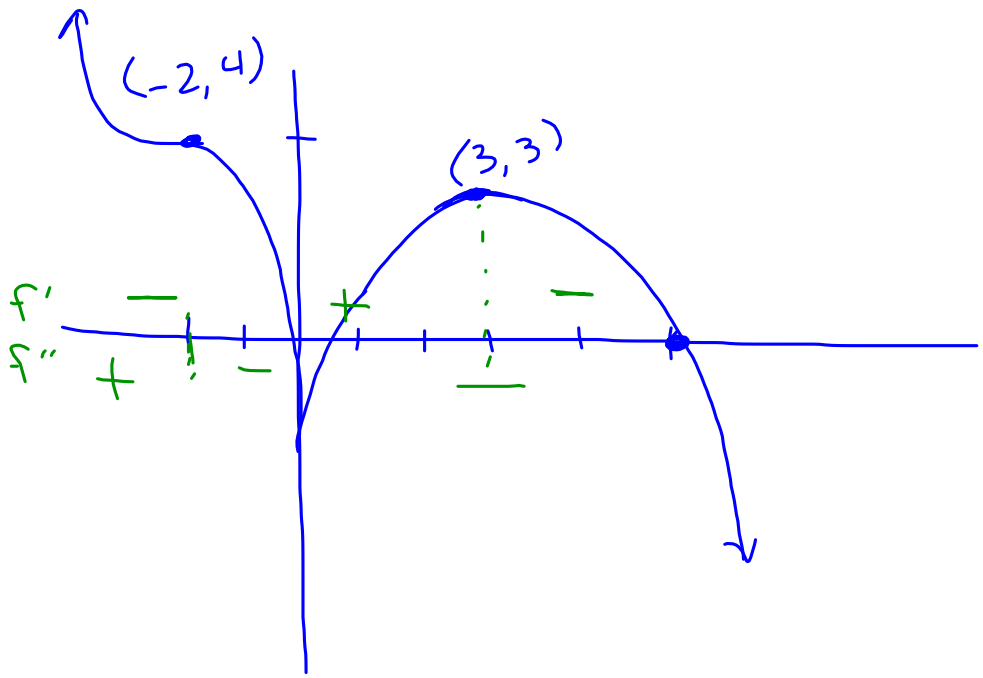


$s = 15 \pm .02$

$V = s^3$

$dV = 3s^2 (ds)$

MVT

$$\frac{f(b)-f(a)}{b-a} = f'(c)$$

Review

7.

$$y = \frac{1}{\sqrt[4]{1-x^2}} = (1-x^2)^{-\frac{1}{4}}$$

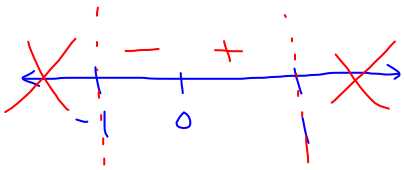
$$y' = -\frac{1}{4}(1-x^2)^{-\frac{5}{4}} \cdot -2x$$

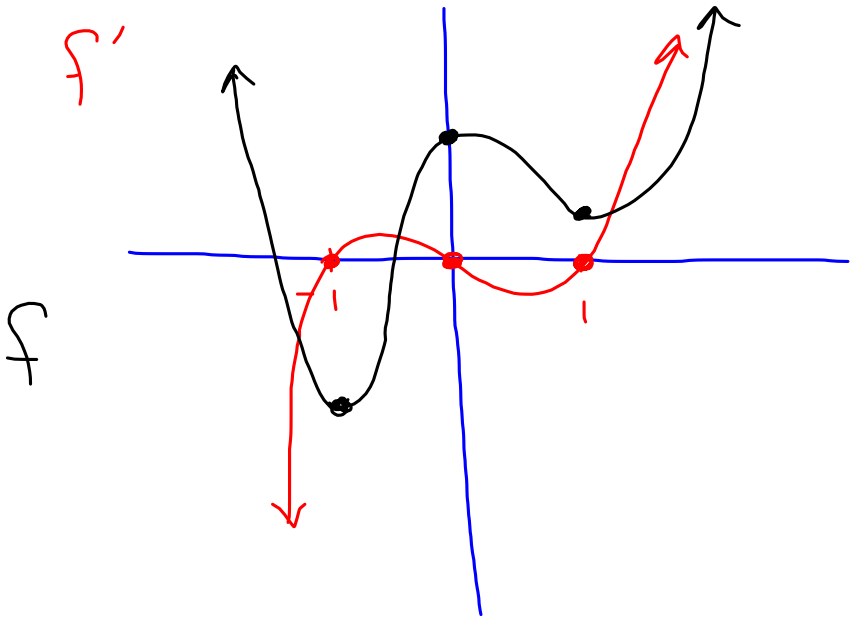
$$y' = \frac{x}{2\left(\sqrt[4]{1-x^2}\right)^5}$$

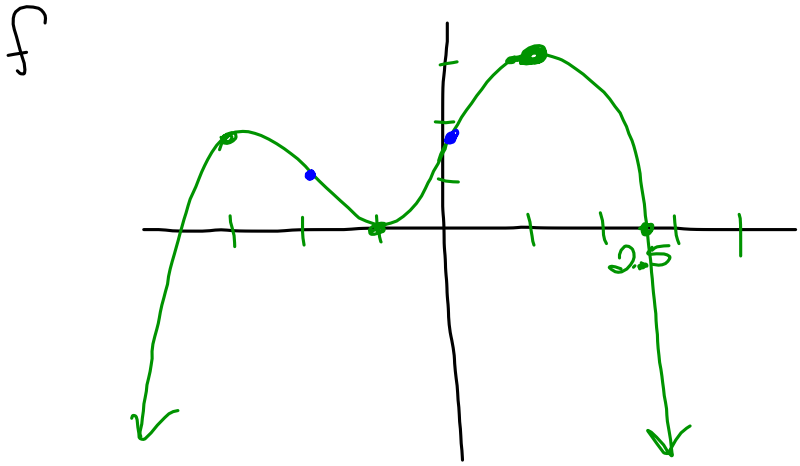
$1-x^2 = 0$

$x = \pm 1$

$x = 0$







$f' = 0$ $f'' = 0$

$f' = (-)$ $f'' = (+)$

37. $f(x) = x \ln x \qquad [.5, 3]$

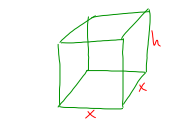
$$\frac{f(3) - f(.5)}{3 - .5} = x\frac{1}{x} + \ln x$$

$$1.457 = 1 + \ln x$$

$$.457 = \ln x$$

$$e^{.457} = x$$

47.



$6 \times 6 \times 3$

$V = x^2 h$

$SA = x^2 + 4xh = 108$

$h = \frac{108 - x^2}{4x}$

$V = x^2\left(\frac{108 - x^2}{4x}\right)$

$V = \frac{1}{4}(108x - x^3)$

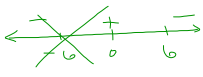
$V = \frac{108x}{4} - \frac{x^3}{4}$

$V' = 27 - \frac{3x^2}{4} = 0$

$\frac{4}{3}27 = \frac{3}{4}x^2$

$36 = x^2$

$x = \pm 6$



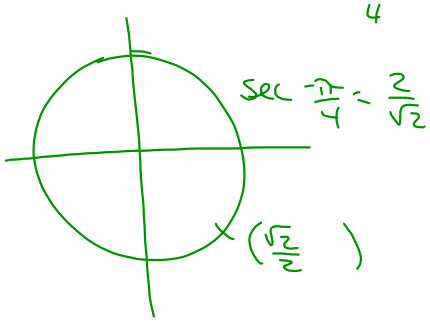
max @ $x = 6$

V' changes from (+) to (−)

27.

$f(x) = \tan x$ $\quad a = -\frac{\pi}{4}$

$f'(x) = \sec^2 x \Big|_{x=-\frac{\pi}{4}} = 2$ $\quad \left(-\frac{\pi}{4}, -1\right)$



$L(x) = 2\left(x + \frac{\pi}{4}\right) - 1$

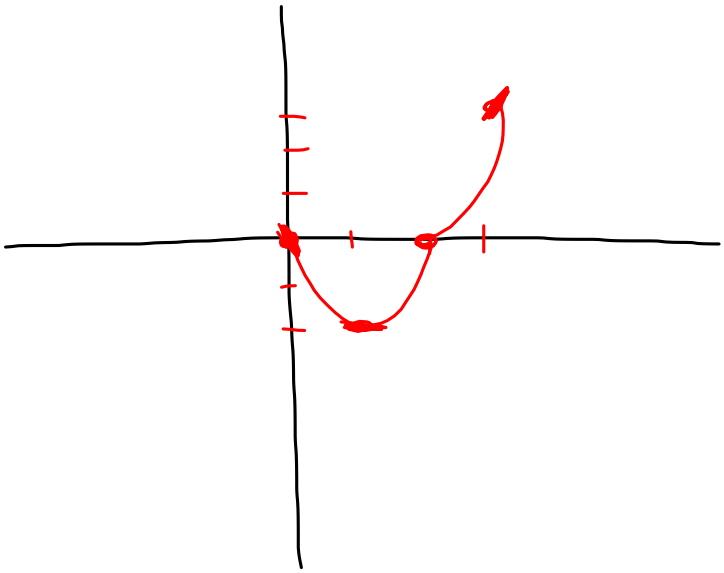
$= 2\left(-\frac{\pi}{6} + \frac{\pi}{4}\right) - 1$

$2\left(-\frac{2\pi}{12} + \frac{3\pi}{12}\right) - 1$

$2\left(\frac{\pi}{12}\right) - 1$

$\frac{\pi}{6} - 1$

36.



37. $f(x) = x \ln x \qquad (.5, 3)$

$$\frac{f(3)-f(.5)}{3-.5} = x\frac{1}{x} + \ln x$$

$$\frac{3\ln 3 - \frac{1}{2}\ln\frac{1}{2}}{2.5} = 1 + \ln x$$

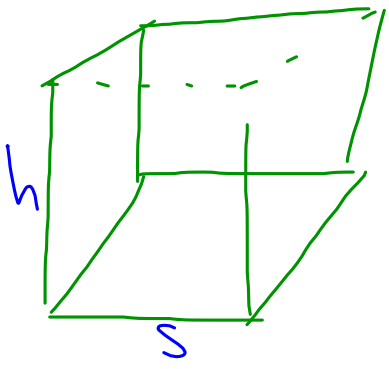
$$1.4569 = 1 + \ln x$$

$$.4569 = \ln x$$

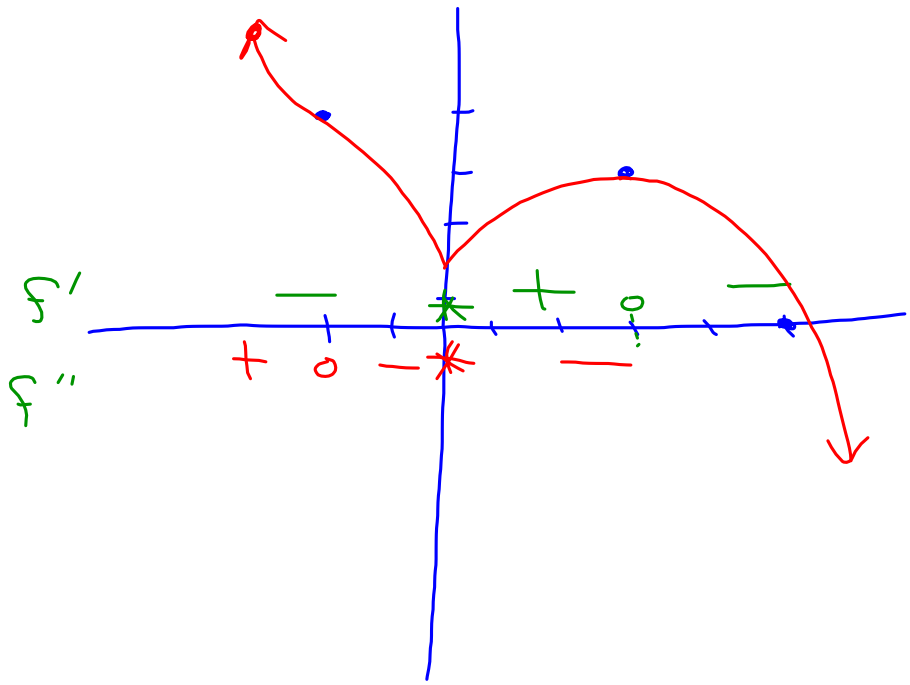
$$e^{.4569} = x$$

$$1.579 = x$$

47.



$V = s^2 h$



MVT

$$\frac{f(b)-f(a)}{b-a} = f'(c)$$

$s = 15 \pm .2$ cm

$V = s^3$

$dV = 3s^2\, ds$

$x^3 + 3x^2 - 5x$

$3x^2\, dx + 6x\, dx - 5\, dx$

$(3x^2 + 6x - 5)\, dx$