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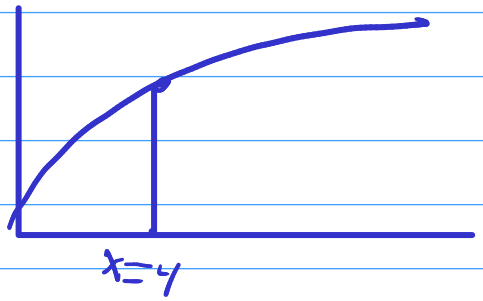
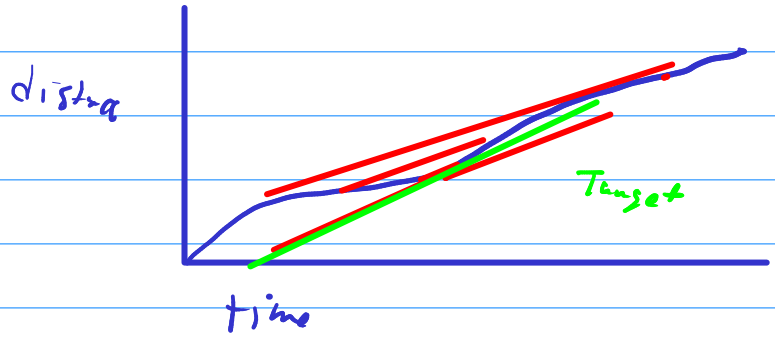
intro form Textbook: Apex Calculus

$y = \sqrt{x}$ $y = 0.99$



Secant lines

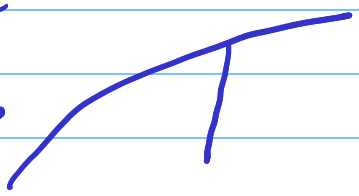


Δ E

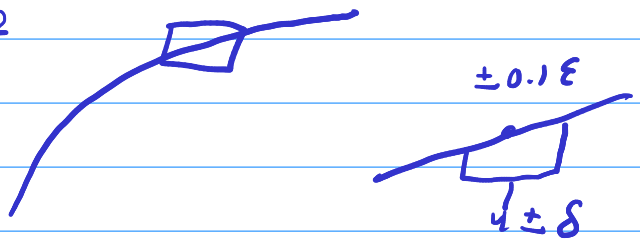
δ ε

θ ϕ τ

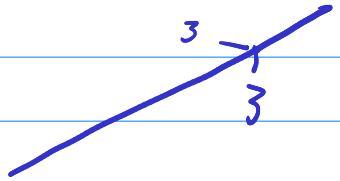
$\lim_{x \to 9} f(x) = 6$



$\lim_{x \to 4} \sqrt{x} = 2$



$y = x$



$2.9 \le x \le 3.1$

then $2.9 \le y \le 3.1$

$y = 2x + 1$

$x = 2$ $\quad \varepsilon = 0.01$ $\quad 4.99 \le y \le 5.01$

$\lim_{x \to 2} y = 5$ $\quad \delta = 0.001$

$1.999 \le x \le 2.001$

2.01

$4.998 \le y \le 5.002$

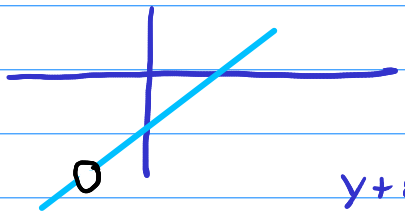
4.98 5.02

$(5 - .003) = 2x + 1$ $\quad 1.998 \le$

$(5 + .003) = 2x + 1$ $\quad 2.001 \le$

$\frac{x^2 - 1}{x + 1}$ $\quad \frac{(x+1)(x-1)}{x+1}$

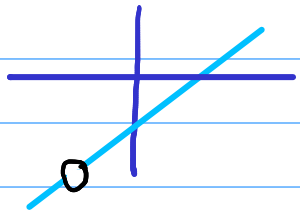
$x \neq -1$



$y + \varepsilon = \frac{x^2-1}{x+1}$

$y - \varepsilon = \frac{x^2-1}{x+1}$

$\lim_{x \to -1} \left(\frac{x^2-1}{x+1}\right) = -2$

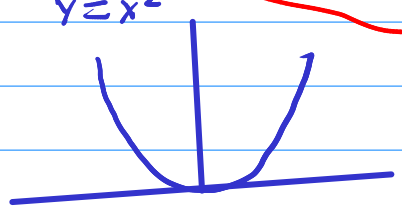


$y +$

$\lim_{x \to -1} y = -2$ $\quad \varepsilon = .01$

$\delta = .01$

$y = x^2$



$\lim_{x \to 1} x^2 = 1$ $\quad \varepsilon = 0.6$ $\quad 1 + \delta$

$1 - \delta$

$1 + \varepsilon = x^2$

$\sqrt{1+\varepsilon} = x$ $\quad 1 + 0.37?$

$\sqrt{1.6} = 1.26$ $\quad 1.37^2$

$\sqrt{0.4} = 0.63$

0.37

0.26

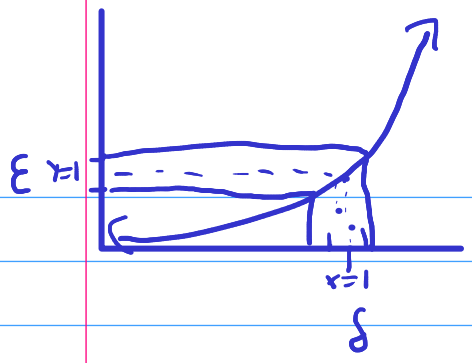
$\lim_{x \to 0} x^2 = 0$ $\quad \varepsilon = 0.5$ $\quad \sqrt{0.5}$

0.707

$\delta = 0.25$

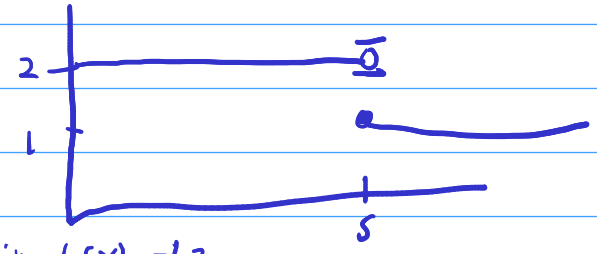
$(+0.25)^2 = 0.0625$

$(-0.25)^2 = 0.0625$



$y = 2 : x < 5$

$y = 1 : x \geq 5$



$\lim_{x \to 5} f(x)$ does not exist $\neq 2$ $\neq 1$

$\varepsilon = 0.1$

$\delta = .001$

$4.999 \leq x \leq 5.001$