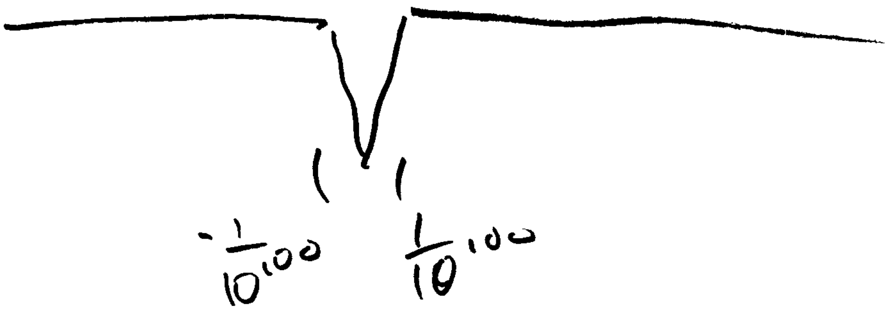
9/10

11:00



$$\lim_{s\to 1} \frac{s^3-1}{s^2-1} = \frac{p(s)}{q(s)} \qquad p(1)=0 \qquad q(1)=0$$

$$p(r) = \overset{0}{\cancel{(r-r)q}}(r)$$

If $p(r)=0$ then $p(x) = (x-r)\underset{n-1}{q(x)} + \underset{\neq 0}{Rem}$

$$\begin{array}{r|l} & s^2 + s + 1 \\ \hline s-1 & s^3 + 0s^2 + 0s - 1 \\ & s^3 - s^2 \\ \hline & s^2 \\ & s^2 - s \\ & s - 1 \\ & \text{r} = \end{array}$$

$= \lim_{s \to 0}$

If $p(3)=0$

$p(x)=(x-3)\,g(x)+0$

$x-3\,\overline{)\,x^4-2x^2+x-66}$

81 -18 +3

$\cancel{\frac{p(x)}{x-3}}=g(x)+\frac{r}{x-3}$

$$
\begin{array}{r}
x^3+3x^2+7x+22 \\
x-3\,\overline{)\,x^4\qquad -2x^2+x-66} \\
\underline{x^4-3x^3} \\
3x^3-2x^2 \\
\underline{3x^3-9x^2} \\
7x^2+x \\
\underline{7x^2-21x} \\
22x-66 \\
22x-66 \\
0
\end{array}
$$

$$\lim_{s\to 1} \frac{s^3-1}{s^2-1} = \lim_{s\to 1} \frac{(s-1)(s^2+s+1)}{(s-1)(s+1)}$$

$s \neq 1$ $$\lim_{s\to 1} \frac{s^2+s+1}{s+1} = \frac{1^2+1+1}{1+1}$$

$\frac{1}{100}, \frac{1}{1000}$

$|x-a| < \delta_1 \quad |f(x)-L| < \frac{\epsilon}{2}$

$|x-a| < \delta_2 \quad |g(x)-M| < \frac{\epsilon}{2} \Rightarrow$

$$|(f(x)+g(x)) - (L+M)| < \frac{\epsilon}{2} + \frac{\epsilon}{2} = \epsilon$$

$$\frac{f}{g} = f \cdot \left(\frac{1}{g}\right)$$

$$(s^5-1) = (s-1)(1+s+s^2+s^3+s^4)$$

$$= s+s^2+s^3+s^4+s^5 - (1+s+s^2+s^3+s^4)$$

$$-1 \qquad +s^5$$

$$= (1-s)(1+s+s^2+s^3+s^4)$$

$|x|<1$

$$= (1-s) + s - s^2 + s^2 - s^3 + s^3 - s^4 + s^4 - s^5$$

$$\xrightarrow{} 0$$

$$x^n - 1 = (x-1)\,1+x+\dots x^{n-1}$$

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

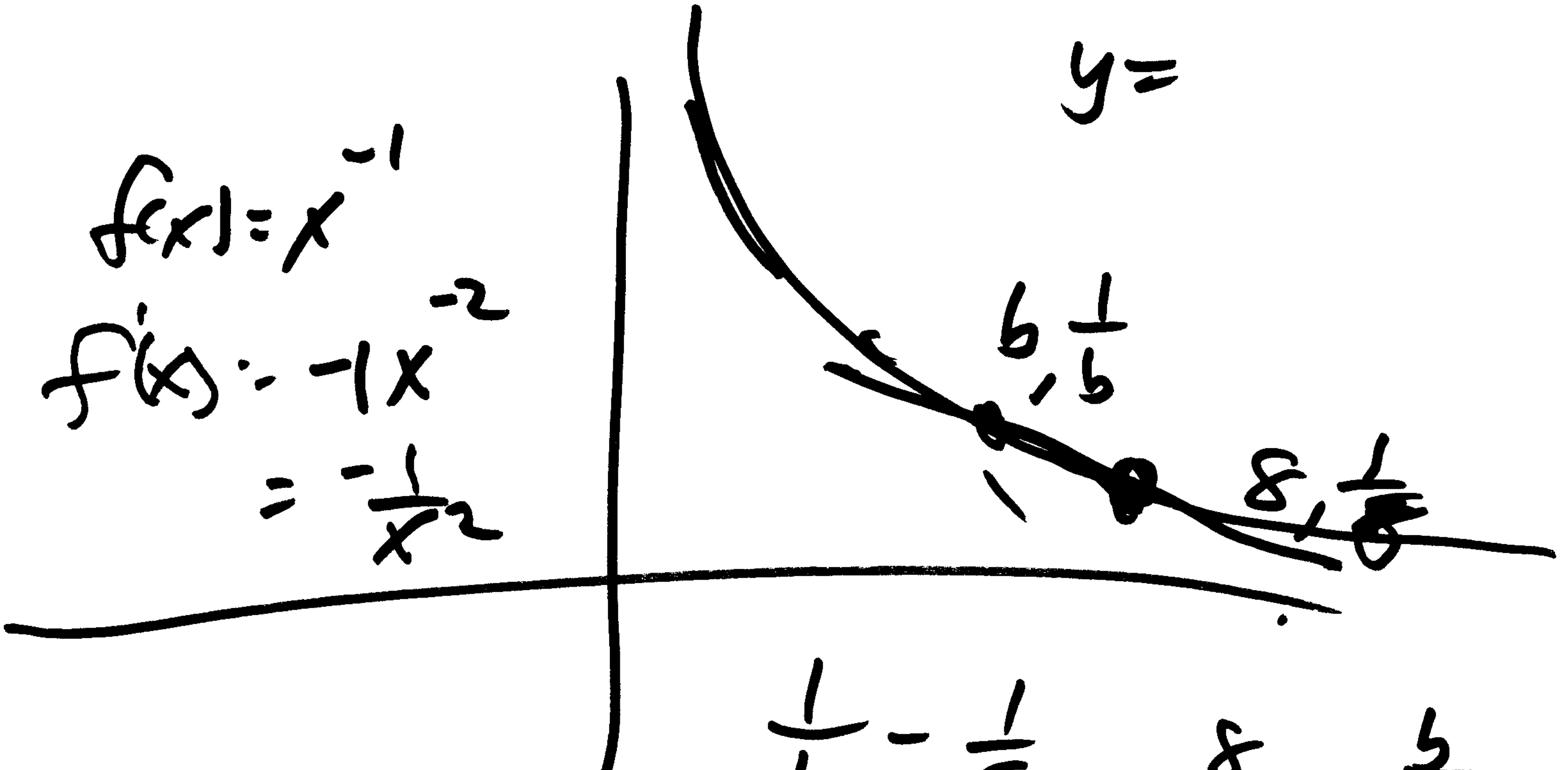
$$\lim_{b \to 8} \frac{\frac{1}{b} - \frac{1}{8}}{b - 8} = \frac{\text{Rise}}{\text{Run}}$$

$y=$

$f(x) = x^{-1}$

$f'(x) = -1x^{-2}$

$= -\frac{1}{x^2}$



$$\frac{\frac{1}{b} - \frac{1}{8}}{b - 8} = \frac{\frac{8}{8b} - \frac{b}{8b}}{b - 8}$$

$$\frac{8 - b}{8b(b-8)} = \frac{-(b-8)}{8b(b-8)} = -\frac{1}{8b} \to = \frac{-1}{8 \cdot 8}$$

$b \neq 8 \qquad b \to 8$

$$\frac{\sqrt{8x^2+5}}{5x+5} = \frac{|x|\sqrt{8+5x^{-2}}}{x\,(5+5x^{-1})}$$

$+\infty \to$

$x \geq 0$ $\quad \to \dfrac{\sqrt{8+5x^{-2}}}{5+5x^{-1}}$

$\to \dfrac{\sqrt{8}}{5}$

$x<0 \quad \dfrac{|x|}{x} = -1$

$x = -\infty \quad = -\dfrac{\sqrt{8+5x^{-2}}}{5+5x^{-1}} \to -\dfrac{\sqrt{8}}{5}$

sqrt( ) $\quad$ ( )^(1/2) $\quad$ ( )**.5