

Quiz #3

9/9/16

$$1a) \lim_{x \rightarrow 3} \frac{\frac{1}{x} - \frac{1}{3}}{x^2 - 9} = \lim_{x \rightarrow 3} \frac{\left(\frac{3-x}{3x}\right)}{(x+3)(x-3)}$$

$$= \lim_{x \rightarrow 3} \left(\frac{3-x}{3x}\right) \left(\frac{1}{(x+3)(x-3)}\right)$$

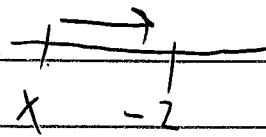
$$= \lim_{x \rightarrow 3} \frac{-1}{3x(x+3)} = \boxed{\frac{-1}{54}}$$

$$1b) \lim_{x \rightarrow 4} \frac{\frac{1}{x} - \frac{1}{4}}{x^2 - 16} = \lim_{x \rightarrow 4} \frac{\left(\frac{4-x}{4x}\right)}{(x+4)(x-4)}$$

$$= \lim_{x \rightarrow 4} \left(\frac{4-x}{4x}\right) \left(\frac{1}{(x+4)(x-4)}\right)$$

$$= \lim_{x \rightarrow 4} \frac{-1}{4x(x+4)} = \boxed{\frac{-1}{128}}$$

$$2a) \lim_{x \rightarrow -2^-} \frac{|x+2|}{3x+6}$$



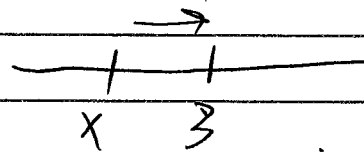
$$x < -2$$

$$x+2 < 0$$

neg

$$= \lim_{x \rightarrow -2^-} \frac{-(x+2)}{3(x+2)} = \left(-\frac{1}{3} \right)$$

$$2b) \lim_{x \rightarrow 3^-} \frac{|x-3|}{2x-6}$$



$$x < 3$$

$$x-3 < 0$$

neg

$$= \lim_{x \rightarrow 3^-} \frac{-(x-3)}{2(x-3)} = \left(-\frac{1}{2} \right)$$