

"QUIZ" for Lecture 6

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E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q6FirstLast.pdf) ASAP BUT NO LATER THAN Sept. 24, 8:00pm

1. Find the limit if it exists, or show that the limit does not exist.

$$\lim_{(x,y) \rightarrow (0,0)} \frac{2x}{2x+3y}$$

$$\lim_{(x,y) \rightarrow (0,0)} = \frac{2(0)}{2(0)+3(0)} \Rightarrow \text{indeterminant form}$$

recall $\rightarrow y = mx$

$$\lim_{(x \rightarrow 0)} \frac{2x}{2x+3mx} = \lim_{x \rightarrow 0} \frac{2x}{x(2+3m)}$$

$$= \lim_{x \rightarrow 0} \frac{2}{3+m} \rightarrow \text{Limit DNE}$$

2. Find the limit if it exists, or show that the limit does not exist.

$$\lim_{(x,y) \rightarrow (0,0)} \frac{x^5}{x^2+y^2}$$

$$\lim_{(x,y) \rightarrow (0,0)} \frac{x^5}{x^2+y^2} = \lim_{(x,y) \rightarrow (0,0)} \frac{0^5}{0^2+0^2} = \frac{0}{0} \rightarrow \text{indeterminant form}$$

$y = mx$:

$$\lim_{x \rightarrow 0} \frac{x^5}{x^2+m^2x^2} = \lim_{x \rightarrow 0} \frac{x^5}{x^2(1+m^2)} = \lim_{x \rightarrow 0} \frac{x^3}{1+m^2} = \lim_{x \rightarrow 0} \frac{0^3}{1+m^2} = 0$$