

"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.

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

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

$$\lim_{(x,y) \rightarrow (0,0)} \frac{2x}{2x+3y} \text{ along } x=y \text{ is } \frac{2}{5}$$

Since these two does not match, limit does not exist
and function diverges.

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

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

$$\lim_{(x,y) \rightarrow (0,0)} \frac{x^5}{x^2+y^2} \text{ along } x=0 = \text{undefined. } \left(\frac{0}{0} \right)$$

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

Plug 0

$$\frac{0}{0+c^2} \Rightarrow \underline{\text{limit is 0}}$$