"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.

$$\lim_{(x,y)\to(0,0)} \frac{2x}{2x+3y} \quad .$$

$\frac{2(0)}{2(0)+3(0)} = \frac{0}{0} \rightarrow y-0 = C(x-0) = y = Cx$

$\lim_{x\to 0} \frac{2x}{2x+3Cx} \rightarrow \lim_{x\to 0} \frac{2x}{(2+3C)x} = \lim_{x\to 0} \frac{2}{2+3C}$ Depends on slope C so lim DNE

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

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

$\frac{0^5}{0^2+0^2} = 0 \rightarrow y-0 = C(x-0) = y = Cx$

$\lim_{x\to 0} \frac{x^5}{x^2+(Cx)^2} \rightarrow \lim_{x\to 0} \frac{x^5}{(1+C^2)x^2} \rightarrow \lim_{x\to 0} \frac{x^3}{1+C^2} = 0$ potentially

$f(r\cos\theta, r\sin\theta) = \frac{(r\cos\theta)^5}{r^2} = \lim_{r\to 0} r^3\cos^5\theta = 0$ so lim = 0