"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.

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

$y = cx$

$$\lim_{x\to 0} \frac{2x}{2x+3(cx)} = \lim_{x\to 0} \frac{2x}{(2+3c)x}$$

$$\lim_{x\to 0} \frac{2}{2+3c} = \frac{2}{2+3c}$$

limit depends on c so we get different limits for different lines. therefore, limit does not exist

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

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

$y = cx$

$$\lim_{x\to 0} \frac{x^5}{x^2+(cx)^2} = \lim_{x\to 0} \frac{x^5}{(1+c^2)x^2}$$

$$= \lim_{x\to 0} \frac{x^3}{(1+c^2)} = \boxed{0} \leftarrow \text{limit}$$