

9/23/20 Quiz for Lecture 6.

$$1) \lim_{(x,y) \rightarrow (0,0)} \frac{2x}{2x+3y}$$

let  $y = mx$

$$\frac{2x}{3x+3mx} = \frac{2}{3+3m}$$

→ lim is dependent on  $m$ ,  
So the limit doesn't exist.

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

$$x = r \cos \theta$$

$$y = r \sin \theta$$

$$r^2 = x^2 + y^2$$

$$\lim_{r \rightarrow 0} \frac{r^5 \cos^5 \theta}{r^2}$$

$$\lim_{r \rightarrow 0} r^3 \cos^5 \theta = 0$$