

Quiz b.

Q1. $\lim_{(x,y) \rightarrow (0,0)} \frac{2x}{2x+3y}$

$$\therefore \frac{2 \cdot 0}{2 \cdot 0 + 3 \cdot 0} = \frac{0}{0}$$

$$\therefore y = cx$$

$$\frac{2x}{2x + 3(cx)}$$

$$= \frac{2x}{x(2+3c)}$$

$$= \frac{2}{2+3c}$$

therefore, this depends on the slope c , we will get different lines

\therefore limit does not exist.

Q2. $\lim_{(x,y) \rightarrow (0,0)} \frac{x^5}{x^2+y^2}$

$$\frac{0}{0+0} = \frac{0}{0} = \frac{0}{0}$$

$$\therefore y = cx$$

$$\frac{x^5}{x^2 + (cx)^2}$$

$$= \frac{x^5}{x^2(1+c^2)}$$

$$= \frac{x^3}{1+c^2}$$

$$= \frac{0}{1+c^2} = 0$$

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

