$$f(x,y) = x^{\frac{1}{3}} y^{\frac{1}{3}}$$

$$D_v f(0,0) = \lim_{h\to 0} \frac{f(hv_1, hv_2) - f(0,0)}{h}$$

$$\lim_{h\to 0} \frac{(hv_1)^{\frac{1}{3}} (hv_2)^{\frac{1}{3}}}{h}$$

$$\lim_{h\to 0} \frac{h^{\frac{2}{3}} v_1^{\frac{1}{3}} v_2^{\frac{1}{3}}}{h} =$$

$$\lim_{h\to 0} \frac{v_1^{\frac{1}{3}} v_2^{\frac{1}{3}}}{h^{\frac{1}{3}}} =$$

$$v_1 = 0$$

$$\lim_{h\to 0} \frac{0 \cdot v_2^{\frac{1}{3}}}{h^{\frac{1}{3}}} = 0$$

$$v_2 = 0$$

$$\lim_{h\to 0} \frac{v_1^{\frac{1}{3}} \cdot 0}{h^{\frac{1}{3}}} =$$

$$v = (v_1, v_2)$$

$$\lim_{h\to 0} \frac{v_1^{\frac{1}{3}} \cdot 0}{h^{\frac{1}{3}}} = \infty$$