



$$1. \lim_{(x,y) \rightarrow (3,0)} f(x,y) = L$$

x_0 y_0 $f(x,y)$ L
 $X = 3$

$$|f(x,y) - L| < \epsilon \text{ WHEN } 0 < \sqrt{(x-x_0)^2 + (y-y_0)^2} < \delta$$

$$|x - 3| < \epsilon \text{ WHEN } 0 < \sqrt{(x-3)^2 + (y-0)^2} < \delta$$

$$\sqrt{(x-3)^2} < \epsilon$$

$$\sqrt{(x-3)^2} \leq \sqrt{(x-3)^2 + (y-0)^2} < \delta$$

so

$$\delta = \epsilon$$

$$2. \lim_{(x,y) \rightarrow (a,b)} f(x,y) = 8 \quad \lim_{(x,y) \rightarrow (a,b)} g(x,y) = 2$$

$$\lim_{(x,y) \rightarrow (a,b)} [3 f(x,y) g(x,y)]$$

$$= 3 \left[\lim_{(x,y) \rightarrow (a,b)} f(x,y) \right] \left[\lim_{(x,y) \rightarrow (a,b)} g(x,y) \right]$$

$$= 3(8)(2)$$

$$= \boxed{48}$$