

## Worksheet #21

(1) Find the limit if it exist

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

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

- $\lim_{(x,y) \rightarrow (0,0)} \frac{x^2+y^2}{x^4-y^4}$

(2) Determine the largest set where the function is continuous.

- $f(x, y) = (4 - x^2 - y^2)^{-1/2}$

- $f(x, y) = \ln(1 - x^2 - y^2)$

- $f(x, y) = \frac{x^3 + xy - 5}{x^2 + y^2 + 1}$