

Name: _____

Math 2030, Fall 2017, Quiz 4
29 September 2017
R. Bruner

No calculators needed or allowed.

For each of the following functions, decide whether

$$\lim_{(x,y) \rightarrow (0,0)} f(x,y)$$

exists or not. If it exists, determine the limit.

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

2. $f(x,y) = \frac{xy^2}{x^2 + y^2}$

3. $f(x,y) = \frac{\sin(x^2 + y^2)}{x^2 + y^2}$