MATH 275 – Section 002 – Quiz 5

You may work with other class members on this quiz, but you may not receive assistance from people not in MATH 275 (Section 002). You must show all of your work to receive full credit. Do all your work on other sheets of paper and be sure to staple all the pieces of paper together or YOU WILL GET A ‘ZERO’ ON THE QUIZ. Do not use decimal approximations unless asked to do so. Your work on this quiz must be handed in by Monday, 23 February 2004 at 12:40 p.m. GOOD LUCK!

1) Find the domain of the function

\[ f(x,y) = (xy + 3x - y - 3)^{-1/2} \]

and sketch the domain in the \( x-y \) plane.

2) Let

\[ z = f(x,y) = x^2 - y^2. \]

Sketch the level curves corresponding to \( z = 0, 1, 4, -1, -4, \frac{1}{4}, \) and \( -\frac{1}{4}. \)

3) Explain why the limit

\[ \lim_{(x,y) \to (0,0)} \frac{\sin(x+y)}{x-y} \]

does not exist.

4) Let \( g(t) = \arccos t. \) Let \( f(x,y) = 1 - y + x^2. \) Define \( h(x,y) \) by

\[ h(x,y) = g(f(x,y)). \]

Sketch the set (in the \( x-y \) plane) on which \( h \) is continuous.