

Last Name: \_\_\_\_\_

First Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## Quiz 9

**Question 1.** (5 marks) Find the maximum rate of change of  $f(x) = \arctan(pqr)$  at  $(1, 2, 1)$  and the direction in which it occurs.

**Question 2.** (5 marks) Find the local maximum and minimum values and saddle point(s) of the function  $f(x) = e^y(y^2 - x^2)$ .

**Question 3.** (5 marks) Find the dimensions of the box with volume  $1000\text{cm}^3$  that has minimal surface area.