Math 2270 Quiz 3

Name ________________________________

Points will be deducted for untidy or disorganized answers

1. Use polar coordinates to evaluate the following double integrals:
   (a) (4 points)
   \[ \int_{-1}^{1} \int_{0}^{\sqrt{1-x^2}} (3y + 4x^2) \, dy \, dx \]
   (b) (4 points)
   \[ \int_{0}^{2} \int_{0}^{y} x \, dx \, dy \]

2. (2 points) Use polar coordinates to evaluate
   \[ \iint_{R} (x^2 + y^2)^{1/2} \, dx \, dy \]
   where \( R \) is the region in the first quadrant bounded by the lines \( y = 0 \) and \( y = x/\sqrt{3} \) and the circle \( x^2 + y^2 = 9 \).