MTH 265, Quiz #7, Fall 2018 Name _____

Instructions: Show all work. Use exact answers unless otherwise asked to round.

1. Consider the function $f(x,y) = \frac{x}{x^2+y^2}$. Sketch the following:
   a. The trace on the yz-plane.

   b. The trace on the xz-plane.

   c. 10 level curves.

   d. Use technology to verify your level curves and produce a 3D graph of the function to verify your results. Attach the graphs to your submission.

2. Find the potential function, if it exists, for the vector field $\vec{F}(x,y,z) = (2xy + yz^2)\hat{\imath} + (x^2 - 2yz + xz^2)\hat{\jmath} + (2xyz - y^2 + \cos z)\hat{k}$. If not potential function exists, show work to prove that it is not.