Name: _____

Directions: Show all work. No credit for answers without work.

1. **[2 points]** Find and sketch the domain of the function $f(x, y) = \dfrac{\sqrt{y - x}}{1 - x^2}$.

2. **[2 points]** Draw a contour map of $f(x, y) = e^{y/x}$ showing four level curves. *Label each level curve with its height.*

3. **[2 parts, 2 points each]** Find the limit, if it exists, or show the limit does not exist.

   (a) $\lim_{(x,y)\to(0,0)} \dfrac{x^2y^2}{x^2+y^2}$

   (b) $\lim_{(x,y)\to(0,0)} \dfrac{x^2y}{x^4+y^2}$

4. **[2 points]** Determine the set of points at which the function $f(x,y) = \dfrac{x+y}{x^2-y^2}$ is continuous.