1. Evaluate the following limits.

\[
\lim_{(x,y) \to (1,1)} e^{xy} + \frac{x}{y} \quad \lim_{(x,y) \to (2,1)} \frac{(x^2 - 4)(y^2 - 1)}{(x - 2)(y - 1)}
\]

2. Show that

\[
\lim_{(x,y) \to (0,0)} \frac{x^2y}{x^4 + y^2}
\]

does not exist. Hint: Consider paths of the form \( y = mx^2 \) for varied \( m \).