Limits of $f(x, y)$

The first plot illustrates that $\lim_{(x,y) \rightarrow (0,0)} \frac{xe^y}{x^2 + y^2}$ DNE. The graph is pinched at the origin. The second plot illustrates that $\lim_{(x,y) \rightarrow (0,0)} \frac{xy}{x^2 + y^2}$ DNE. The graph is pinched at the origin. The third plot illustrates that $\lim_{(x,y) \rightarrow (0,0)} \frac{x^3 + 2y^3}{x^2 + y^2} = 0$. The graph is wrinkly but not pinched at the origin.