

You cannot use a calculator for this quiz

Problem 1. Use squeeze theorem to find the following limit:

$$\lim_{(x,y) \rightarrow (0,0)} \frac{xy^4}{x^4 + y^4}.$$

$$\left| \frac{xy^4}{x^4 + y^4} \right| = \frac{|x|y^4}{x^4 + y^4} \leq \frac{|x|y^4}{y^4} = |x|.$$

Since $\lim_{(x,y) \rightarrow (0,0)} |x| = 0$, it follows from the squeeze theorem that

$$\lim_{(x,y) \rightarrow (0,0)} \frac{xy^4}{x^4 + y^4} = 0.$$