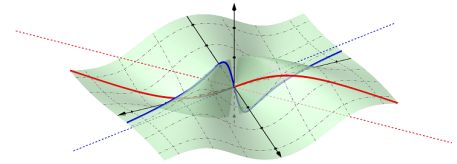
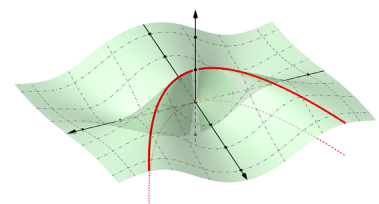


Problem. Consider $\lim_{(x,y) \rightarrow (0,0)} \frac{x^2 y}{x^4 + y^2}$.

- (a) Determine the path limit at $(0,0)$ along all straight paths. (Hint: Different straight paths have different algebraic expressions. Therefore, you have to deal with **three** categories (NOT three concrete examples.))



- (b) Determine the path limit at $(0,0)$ along the parabolic path $y = x^2$.



- (c) Does the (overall) limit exist? Type your explanation. (**Remark.** Handwritten response receives no credit for this part.)