Use Mathematica to solve the following problems.

1. Use \( f[x, y] := x \cdot y^2 - x^3 \) to define a two-dimensional function, and Plot3D to plot the 3D surface:
   \[
   \text{Plot3D}[f[x,y], \{x,-2,2\}, \{y,-2,2\}]
   \]
   You can now plot several contour lines in order to determine the shape of the graph more closely as follows:
   \[
   \text{ContourPlot}[\{f[x,y] == 1, f[x,y] == 2, f[x,y] == 0\}, \{x,-2,2\}, \{y,-2,2\}]
   \]
   This surface is known as the monkey saddle.

2. Do the same for the function \( f(x, y) = xy^3 - y^3 \) (dog saddle), and the function
   \[
   g(x, y) = e^{-\frac{x^2+y^2}{3}}(\sin x^2 + \cos y^2).
   \]

3. Use the graph of \( \frac{2x^2+3xy+4y^2}{3x^2+5y^2} \) in order to explain why the limit as \( (x, y) \to (0,0) \) does not exist.