

## Week #5

Some problems and solutions selected or adapted from Stewart Calculus.

### Maximum and Minimum Values

For questions 1-4, find the local maximum and minimum values and saddle point(s) of the function. If you have access to three-dimensional graphing software (e.g. MATLAB or Wolfram Alpha), graph the function with a domain and viewpoint that reveal all the important aspects of the function.

1.  $f(x, y) = (x - y)(1 - xy)$

3.  $f(x, y) = x^3 - 12xy + 8y^3$

2.  $f(x, y) = y^3 + 3x^2y - 6x^2 - 6y^2 + 2$

4.  $f(x, y) = (x^2 + y^2)e^{y^2 - x^2}$