Download the worksheet *mar31.mw* from onCourse, and use this worksheet as a template to help you solve the following problems.

1. Find all critical points of $f(x, y) = 4xy - x^4 - y^4 + 3$ and classify them as local maxima, local minima, or saddle points.

2. A rectangular, open-top box is to be constructed out of 48 square feet of cardboard. Find the dimensions x, y, and z that will maximize the volume of the box.

3. Find and classify all critical points of $g(x, y) = -(x^2 - 1)^2 - (x^2 y - x - 1)^2$

4. Find and classify all critical points of $h(x, y) = 5 - 10\,x\,y - 4\,x^2 + 3\,y - y^4$