1. Find and classify all critical points of $f(x, y) = 25x^4 - 30x^2 + 4y^2 - 12y + 18$

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

3. A rectangular, open-top box is to be constructed out of 60 square feet of cardboard. Find the dimensions x, y, and z that will maximize the volume of the box.

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

5. Find the point on the surface $z = x^2 + y^2$ closest to the point $(3, 2, 6)$

6. Find the point on the surface $z = x^2 - y^2$ closest to the point $(3, 2, 6)$