Lesson 32. Local Minima and Maxima, cont.

1. Suppose $(0, 2)$ is a critical point of a function f with continuous second derivatives. In each case, what can you say about g?

   a. $g_{xx}(0, 2) = -1$, $g_{xy}(0, 2) = 6$, $g_{yy}(0, 2) = 1$

   b. $g_{xx}(0, 2) = 4$, $g_{xy}(0, 2) = 6$, $g_{yy}(0, 2) = 9$

2. Find the local maxima and minima and saddle points of the following functions.

   a. $f(x, y) = x^2 - xy + y^2 + 9x - 6y + 10$

   b. $f(x, y) = x^3 - 6xy + 8y^3$

   c. $f(x, y) = 3xy - x^2y - xy^2$

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