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

   a) Find the gradient of $f(x,y)$.

      Answer: $\langle 3x^2 - 4xy^2, -2x^2 + 3y \rangle$

   b) Find the direction (as a unit vector) and magnitude of steepest ascent at the point $(1,1)$.

      Answer: Direction $= \langle -1/\sqrt{2}, 1/\sqrt{2} \rangle$, magnitude $= \sqrt{2}$

   c) What is the direction of steepest descent at this point?

      Answer: $\langle 1/\sqrt{2}, -1/\sqrt{2} \rangle$