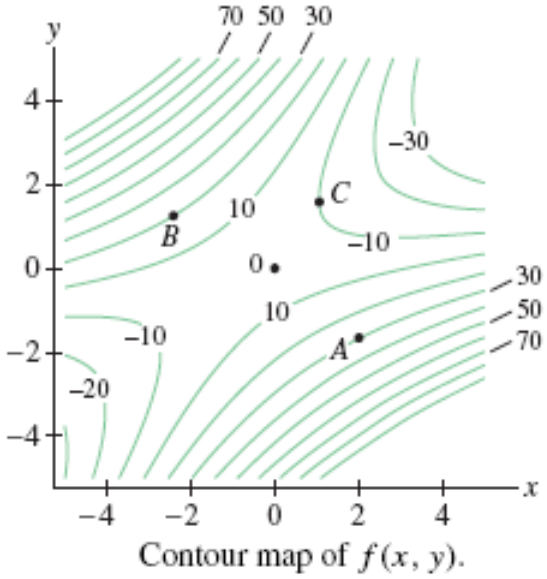
Math 251 **Quiz 03 (WeBWorK 4)**

October 4, 2013; 10 minutes Name: _____

This quiz is *open-note*, but no books or calculators may be used. In calculation, you can show work at your discretion, but remember that I can't give partial credit for calculations I can't see. Explain anything that seems to need explaining.

1. A contour map for a function $f(x,y)$ is pictured below. Select the best answer to each of the questions regarding the partial derivatives f_x and f_y at the various labeled points.



Contour map of $f(x, y)$.

(a) At point A:
- ◯ $f_x > 0$ and $f_y > 0$
- ◯ $f_x < 0$ and $f_y > 0$
- ◯ $f_x > 0$ and $f_y < 0$
- ◯ $f_x < 0$ and $f_y < 0$

(b) At point B:
- ◯ $f_x > 0$ and $f_y > 0$
- ◯ $f_x < 0$ and $f_y > 0$
- ◯ $f_x > 0$ and $f_y < 0$
- ◯ $f_x < 0$ and $f_y < 0$

(c) At point C:
- ◯ $f_x > 0$ and $f_y > 0$
- ◯ $f_x < 0$ and $f_y > 0$
- ◯ $f_x > 0$ and $f_y < 0$
- ◯ $f_x < 0$ and $f_y < 0$

Note: the graph of the function $f(x,y)$ is called a "saddle surface". Can you see why?

2. Compute g_x and g_y if g is given by the formula

$$g(x,y) = \frac{4x}{(x^2+y^2)^{3/2}}.$$

Do not simplify your answers.