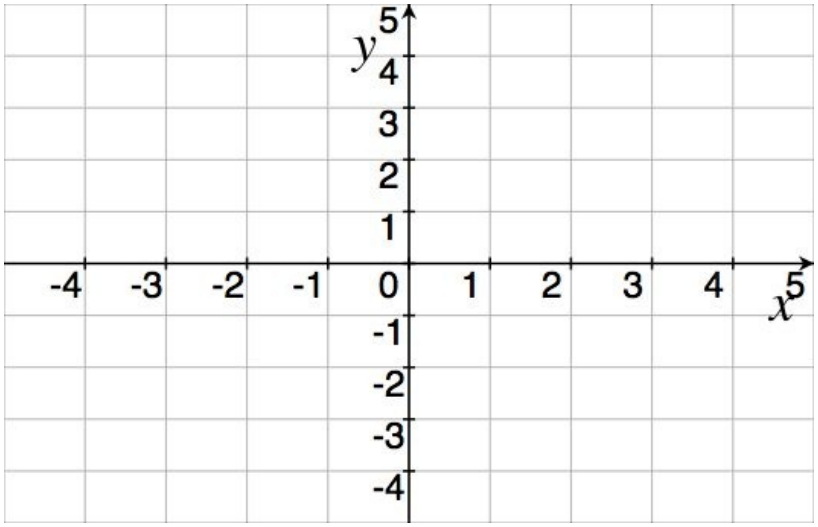
TMATH 124: Quiz 2

You may use any work of yours that you made from last week. This includes, practice book problems and worked out WebAssign problems. This *does not* include photocopies of notes from the book or tutorials shown on WebAssign. Graphing calculators are also not allowed. In short, you are only allowed to use *work* that you created.

Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work.

1. Let $f(x) = \frac{1}{x}$

   (a) [1] *Carefully* graph f on the axis provided and sketch the line tangent to f when $x = -2$.



   (b) [3] Use the definition of derivative to find $f'(-2)$.

   (c) [1] Find the equation of the line you drew in part (a).

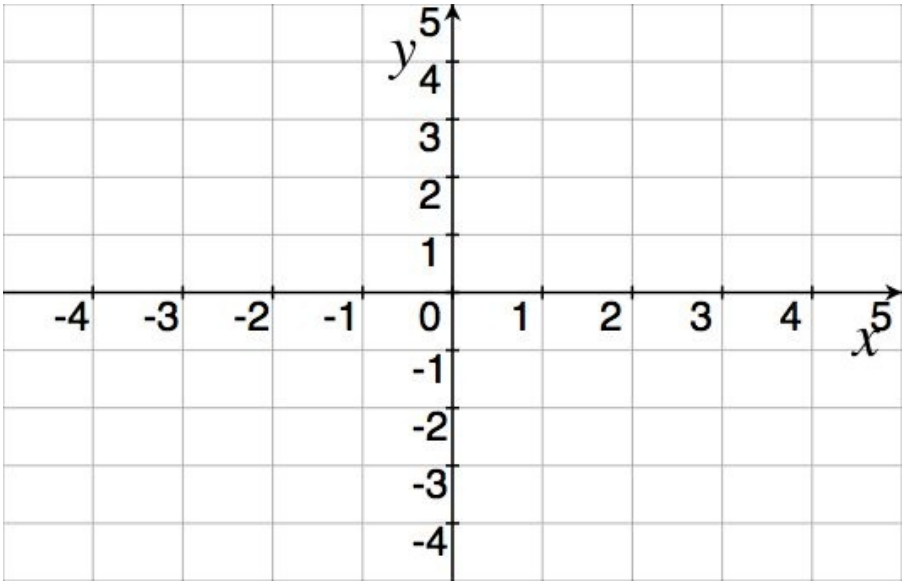
2. [2] Sketch the graph of an example function g that satisfies the following conditions:

   (a) g is not continuous (discontinuous) when $x = -3$

   (b) $\lim_{x \to -\infty} g(x) = 0$

   (c) $g(1) = 3$

   (d) $g'(1) = 0$



3. [3] Determine the following, if they exist:

$$\lim_{x \to 4} \frac{5 + \sqrt{x}}{\sqrt{5 + x}}$$

$$\lim_{x \to \infty} \frac{\sqrt{2x^2 + 1}}{3x - 5}$$