Math 221
Worksheet: Some problems about studying a graph using derivatives
November 11, 2014

1. Label all inflection points for the function $f(x)$ on the graph below.

![Graph of f(x)](image)

2. The following is a graph of $g'(x)$, for some function $g(x)$.

![Graph of g'(x)](image)

(a) On what intervals is $g(x)$ increasing?
(b) On what intervals is $g(x)$ concave-up?
(c) At what $x$-values does $g(x)$ have a local maximum? Local minimum?
(d) At what $x$-values does $g(x)$ have an inflection point?

3. Draw a graph of a function which is increasing and concave-down on the interval $(-1, 2)$.

4. True or False? If the domain of $f(x)$ is all real numbers, and $f'(x) > 0$ for all real numbers, then $\lim_{x \to \infty} f(x) = \infty$. (explain why.)

5. What is the range of the function $f(x) = x - \ln(x)$?