Homework 4, due Friday 2/11

1. p. 149, problems (1), (3), (5), (14)
2. p. 150, problems (15), (17)
3. p. 159, problem (5), (a)–(c). First compute $\frac{df}{dt}$ using the chain rule. Then write $f(x(t), y(t))$ as a t–function by plugging in and then compute the derivative without the chain rule. Compare the results.
4. p. 171, problems (1), (2) (a), (b)
5. p. 171, problem (6) (a), (b) and determine the direction of fastest increase at the point $(1, 1, 1)$.
6. Given a function f and a point x such that $\nabla(f) \neq 0$. What is the direction for which f *decreases* the most?