MATH 151 Homework 18
Due 3/29

Read Sections 4.1 to 4.3. Peruse 4.4 and 4.5.

Do Section 4.1 Exercises 6, 52,
Do Section 4.2 Exercises 2, 6, 12, 24, 30
Do Section 4.3 Exercise 5, 8, 10, 11, 12, 18, 22, 27, 29, 36, 47

Also, do the following exercises.

SF42. A cat is tossed straight up with an initial velocity of 50 ft/sec. The cat is 5 feet above the ground when it is released. Its height, in feet, at time t seconds is given by

$$y = -16t^2 + 50t + 5.$$

How high does it go before returning to the ground?

SF43. A chemical reaction converts minerals to vespene gas. At the start of the reaction, minerals are present in a grams. At time t seconds later, vespene gas is present in y grapms. The rate of the reaction, in grams/sec is given by

$$\text{Rate} = ky(a - y)$$

where k is a positive constant.

(a) For what values of y is the rate nonnegative? Graph the rate against y.

(b) For what values of y is the rate a maximum?