Written Assignment 3

Due Wednesday, July 13th

1. (Ch. 3 # 36, 38, 40) Identify whether or not the following functions are polynomials. If a function is a polynomial, state its degree, leading term, and leading coefficient.

   (a) $V(t) = 4 - t^3 + t$

   (b) $W(t) = 8^t - t^4 + 2$

   (c) $X(n) = 4n^{100} - 3n^{99} + 2n^{98} + 1$

2. (Ch. 3 # 42, 44, 48, 50) Identify the long-run behavior of each polynomial function.

   (a) $s(x) = 4200 + 170x - 32x^6 + 19x^4$

   (b) $u(t) = 0.5(t + 3)(1 - t^2)(2 - t)$

   (c) $f(t) = 12 - t^3 + 16t^2$

   (d) $f(t) = -2(t^2 + 1)(t^2 - 4)$

3. (Ch. 3 # 83, 84) The effective residential property tax rate in Oak Park, Illinois over the period from 2002 to 2011 can be modeled relatively well by the function

$$R(t) = 0.017t^2 + 1.95 \text{ percent},$$

   t years after 2002.

   (a) What is the average rate of change in tax rate between 2002 and 2011?

   (b) According to the model, when did the minimum tax rate occur? What was that minimum rate?