AMS 326 - Homework 7

Due Tuesday, December 5, 2006

1. The following data are the total population of the United States, as determined by the U.S. Census, for the years 1900 to 2000. The units are millions of people.

t	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
y	76	91.97	105.71	123.2	131.67	150.7	179.32	203.21	226.51	249.63	281.42

The task is to model the population growth and predict the population when $t = 2010$. Find the least fit to the following model

$$y = b_3 s^3 + b_2 s^2 + b_1 s + b_0,$$

where $s = (t - 1950)/50$. Plot the least square fit with solid line and data with "$\circ$" in (t, y) variables. What will the population be in 2010 according to your model?
(Hint: You may complete polyfit.cc on the web.)