Math 041 Assignment 2.3   Name_____

Give complete solutions to the following problems be sure to provide all the necessary steps to support your answers.

1.   Let $f(x) = x^3 + x^2 - 6x + 7$

a.   Write $\dfrac{f(x)}{x-3}$ in divisor, quotient remainder form,   Ans_____

     that is $f(x) = d(x)q(x) + r(x)$

b.   Evaluate $f(3)$ and compare to r Ans_____

2.   Divide the given polynomial then write your answer in   Ans_____
     the form : $P(x) = d(x)q(x) + r(x)$

     $(x^4 - 2x^2 + 10) \div (x^2 + 1)$

3. Use synthetic division to find $f(3)$, where   Ans_____

$f(x) = x^4 - x^3 - 5x^3 + 2x^2 - 12x + 32$

4. Divide using synthetic division   Ans_____

$(2x^4) \div (x + 2)$

5. Write the function in the form $f(x) = (x - k)q(x) + r$ for the given value of k.

$f(x) = x^3 + 3x^2 - 5x - 7, \ k = -5$

The amounts A (in billions of dollars) of national health care expenditures in the United States from 2000 through 2007 are shown in the table, where t represents the year, with t = 0 corresponding to 2000.

year, t	0	1	2	3	4	5	6	7
Amount, A	30.5	32.2	34.2	38.0	42.7	47.9	52.7	57.6

a. Use a graphing utility to create a scatter plot of the data.

b. Use the regression feature of the graphing utility to find a cubic model for the data. (Round each value to three decimal places.)
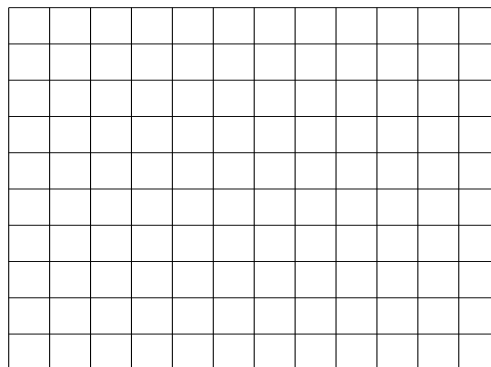
c. Sketch the polynomial on the scatter plot.