

NAME: _____

P.I. A2.S.7: Determine the function for the regression model, using appropriate technology, and use the regression function to interpolate and extrapolate from the data

1. The number of answer machines sold can be modeled by the function

$f(x) = -0.010789x^3 + 0.2226x^2 + 0.311x - 0.75$ where x is the number of years since 1980 and $f(x)$ is the number in millions.

Use this function to find the number of answer machines sold in 1986.

- [A] 8.4 million [B] 6.8 million [C] 8.6 million [D] 14.2 million

2. The table shows the number of hybrid cottonwood trees planted in tree farms in Oregon since 1987. Find a cubic function to model the data and use it to estimate the number of cottonwoods planted in 1998.

Years since 1987	1	3	5	7	9
Trees planted (in thousands)	0.8	10.6	44.4	116.6	241.6

- [A] $0.5x^3 - 0.2x + 0.7$; 429 thousand [B] $0.5x^3 + 0.3x^2 - 0.4x + 0.4$; 429 thousand
[C] $0.3x^3 - 0.4x + 0.7$; 433.8 thousand [D] $0.3x^3 + 0.3x^2 - 0.2x + 0.4$; 433.8 thousand

3. The table shows the number of llamas born on llama ranches worldwide since 1988. Find a cubic function to model the data and use it to estimate the number of births in 1999.

Years since 1988	1	3	5	7	9
Llamas born (in thousands)	0.9	15.1	61.3	158.7	326.5

4. A publisher reported these sales of a book series on hobbies.

Years since 1985	1	3	6	8	9
Books sold (thousands)	4.3	6.1	10.7	12.1	13.5

Use the cubic regression feature of a graphing calculator to find the cubic equation that best fits this data.

5. The table shows the Consumer Price Index (CPI) for several years.

Years since 1982	1	5	8	9	11
CPI	90.9	113.6	130.7	136.2	144.5

Find a cubic function to fit this data. Use the function to determine what the CPI was in 1970.

[1] B

[2] D

[3] $0.4x^3 + 0.4x^2 + 0.3x - 0.2$; 583.9 thousand

[4] $-.0159039385x^3 + 0.2245994236x^2 + 0.3299097022x + 3.702259366$

[5] $y = -0.0220179435x^3 + 0.3241539606x^2 + 4.401248141x + 86.20180364$; 118.112