Name Answer Key Date _____ Class _____

LESSON 6-9

Practice A

Curve Fitting with Polynomial Models

Complete each statement.

1. Linear functions have constant First differences.
2. Cubic functions have constant Third differences.
3. Quadratic functions have constant Second differences.
4. Quadratic functions are Second degree functions.
5. Linear functions are First degree functions.
6. Cubic functions are Third degree functions.

Use finite differences to determine the degree of the polynomial that best describes the data.

7.

x	0	1	2	3	4	5
y	−5	1	12	29	53	85

a. Which differences are constant? Third

b. Identify the degree of the polynomial of best fit. Cubic

8.

x	−2	−1	0	1	2	3
y	32	22	15	15	24	42

a. Which differences are constant? Fourth

b. Identify the degree of the polynomial of best fit. Quartic

9.

x	5	7	9	11	13	15
y	26	40	45	44	40	36

a. Which differences are constant? Third

b. Identify the degree of the polynomial of best fit. Cubic

10. Use a graphing calculator to find a polynomial function for the data in Exercise 7.

$f(x) \approx 0.167x^3 + 2x^2 + 3.833x - 5$

11. Use a graphing calculator to find a polynomial function for the data in Exercise 9.

$f(x) \approx 0.625x^3 - 2.438x^2 + 29.438x - 68.063$

7.)

x	0	1	2	3	4	5
y	-5	1	12	29	53	85

6 11 17 24 32

5 6 7 8

1 1 1

8.)

x	-2	-1	0	1	2	3
y	32	22	15	15	24	42

-10 -7 0 9 18

3 7 9 9

4 2 0

-2 -2

9.)

x	5	7	9	11	13	15
y	26	40	45	44	40	36

14 5 -1 -4 -4

-9 -6 -3 0

3 3 3