Name _____ Class _____ Date _____

Practice 6-1

Polynomial Functions

Find a cubic model for each function. Then use your model to estimate the value of y when $x = 7$.

1.

x	0	2	4	6	8	10
y	25	21	20	23	19	17

2.

x	0	2	4	6	8	10
y	3.1	4.2	4.3	4.4	5.1	6.7

Write each polynomial in standard form. Then classify it by degree and by number of terms.

3. $4x + x + 2$

4. $-3 + 3x - 3x$

5. $6x^4 - 1$

6. $1 - 2s + 5s^4$

7. $5m^2 - 3m^2$

8. $x^2 + 3x - 4x^3$

9. $-1 + 2x^2$

10. $5m^2 - 3m^3$

11. $5x - 7x^2$

12. $2 + 3x^3 - 2$

13. $6 - 2x^3 - 4 + x^3$

14. $6x - 7x$

15. $a^3(a^2 + a + 1)$

16. $x(x + 5) - 5(x + 5)$

17. $p(p - 5) + 6$

18. $(3c^2)^2$

19. $-(3 - b)$

20. $6(2x - 1)$

21. $\frac{2}{3} + s^2$

22. $\frac{2x^4 + 4x - 5}{4}$

23. $\frac{3 - z^5}{3}$

24. The lengths of the sides of a triangle are $x + 4$ units, x units, and $x + 1$ units. Express the perimeter of the triangle as a polynomial in standard form.

25. Find a cubic function to model the data below. (Hint: Use the number of years past 1940 for x.) Then use the function to estimate the average monthly Social Security Benefit for a retired worker in 2010.

Average Monthly Social Security Benefits, 1940–2003

Year	1940	1950	1960	1970	1980	1990	2000	2003
Amount (in dollars)	22.71	29.03	81.73	123.82	321.10	550.50	844.60	922.10

Source: *www.infoplease.com*

26. Find a cubic function to model the data below. (Hint: Use x to represent the gestation period.) Then use the function to estimate the longevity of an animal with a gestation period of 151 days.

Gestation and Longevity of Certain Animals

Animal	Rat	Squirrel	Pig	Cow	Elephant
Gestation (in days)	21	44	115	280	624
Longevity (in years)	3	9	10	12	40

Source: *www.infoplease.com*