

## 5-1

## Practice

Form G

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

1.  $4x + x + 2$

2.  $-3 + 3x - 3x$

3.  $6x^4 - 1$

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

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

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

7.  $-1 + 2x^2$

8.  $5m^2 - 3m^3$

9.  $5x - 7x^2$

10.  $2 + 3x^3 - 2$

11.  $6 - 2x^3 - 4 + x^3$

12.  $6x - 7x$

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

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

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

16.  $(3c^2)^2$

17.  $-(3 - b)$

18.  $6(2x - 1)$

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

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

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

Determine the end behavior of the graph of each polynomial function.

22.  $y = 3x^4 + 6x^3 - x^2 + 12$

23.  $y = 50 - 3x^3 + 5x^2$

24.  $y = -x + x^2 + 2$

25.  $y = 4x^2 + 9 - 5x^4 - x^3$

26.  $y = 12x^4 - x + 3x^7 - 1$

27.  $y = 2x^5 + x^2 - 4$

28.  $y = 5 + 2x + 7x^2 - 5x^3$

29.  $y = 20 - 5x^6 + 3x - 11x^3$

30.  $y = 6x + 25 + 4x^4 - x^2$

Describe the shape of the graph of each cubic function by determining the end behavior and number of turning points.

31.  $y = x^3 + 4x$

32.  $y = -2x^3 + 3x - 1$

33.  $y = 5x^3 + 6x^2$

Determine the degree of the polynomial function with the given data.

34.

x	y
-2	-16
-1	1
0	4
1	5
2	16

35.

x	y
-2	52
-1	6
0	2
1	4
2	48

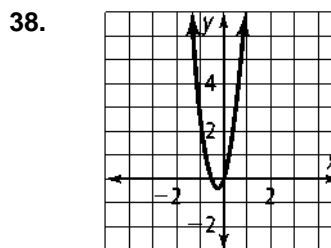
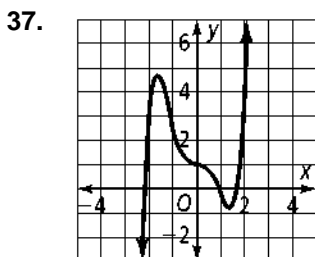
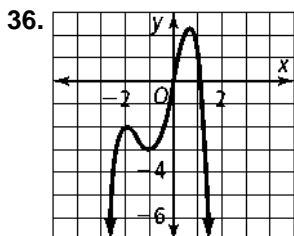
# 5-1

## Practice (continued)

Form G

### Polynomial Functions

Determine the sign of the leading coefficient and the degree of the polynomial function for each graph.



39. **Error Analysis** A student claims the function  $y = 3x^4 - x^3 + 7$  is a fourth-degree polynomial with end behavior of down and down. Describe the error the student made. What is wrong with this statement?

40. The table at the right shows data representing a polynomial function.

- What is the degree of the polynomial function?
- What are the second differences of the y-values?
- What are the differences when they are constant?

x	y
-3	-999
-2	-140
-1	-7
0	0
1	1
2	116
3	945

Classify each polynomial by degree and by number of terms. Simplify first if necessary.

41.  $4x^5 - 5x^2 + 3 - 2x^2$

42.  $b(b - 3)^2$

43.  $(7x^2 + 9x - 5) + (9x^2 - 9x)$

44.  $(x + 2)^3$

45.  $(4s^4 - s^2 - 3) - (3s - s^2 - 5)$

46. 13

47. **Open-Ended** Write a third-degree polynomial function. Make a table of values and a graph.

48. **Writing** Explain why finding the degree of a polynomial is easier when the polynomial is written in standard form.