3-1 Additional Practice

Graphing Polynomial Functions

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

1. $4x + x + 2$

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

Use the leading coefficient and degree of the polynomial function to determine the end behavior of the graph.

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

4. $f(x) = 4x^2 + 4x - 6$

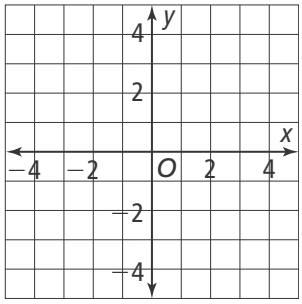
Sketch the graph using the clues listed. Identify the turning points and x-intercepts.

5. $f(x)$ is negative on the intervals $(-\infty, -5)$ and $(-1, 3)$

$f(x)$ is positive on the intervals $(-5, -1)$ and $(3, \infty)$

$f(x)$ is increasing on the interval $(-\infty, -3.5)$ and $(1.25, \infty)$

$f(x)$ is decreasing on the interval $(-3.5, 1.25)$



6. Keegan is printing and selling his original design on t-shirts. He has concluded that for x shirts in thousands sold, his total amount earned in thousands of dollars can be respresented with the function $p(x) = -2x^4 + 4x^2 + 3x + 2$. How many t-shirts, rounded to the nearest whole number, should he print in order to maximize his earnings? What will his earnings be, rounded to the nearest whole dollar, if he prints that number of shirts?

7. The table shows data representing a polynomial function.

a. What is the degree of the polynomial function?

b. What are the second differences of the y-values?

c. What are the differences when they are constant?

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