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

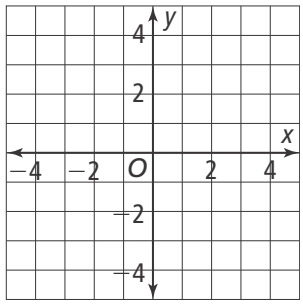
Sketch the graph using the clues listed. Identify the turning points and x-intercepts.

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 profits will be $p(x)$ = dollars, in thousands will be earned. How many *t*-shirts (rounded to the nearest whole number) should he print in order to make maximum profits? What will his profits rounded to the nearest whole dollar be if he prints that number of shirts?

7. The table at the right 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