Name_____ Date _____

4.1 Notetaking with Vocabulary (continued)

Extra Practice

In Exercises 1–4, decide whether the function is a polynomial function. If so, write it in standard form and state its degree, type, and leading coefficient.

1. $f(x) = 2x^2 - 3x^4 + 6x + 1$

2. $m(x) = -\frac{3}{7}x^3 + \frac{7}{x} - 3$

3. $g(x) = \sqrt{15}x + \sqrt{5}$

4. $p(x) = -2\sqrt{3} + 3x - 2x^2$

In Exercises 5 and 6, evaluate the function for the given value of *x*.

5. $h(x) = -x^3 - 2x^2 - 3x + 4;\ x = 2$

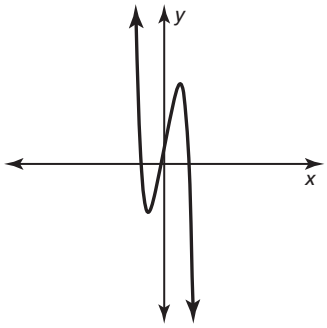
6. $g(x) = x^4 - 32x^2 + 256;\ x = -4$

In Exercises 7 and 8, describe the end behavior of the graph of the function.

7. $f(x) = -3x^6 + 4x^2 - 3x + 6$

8. $f(x) = \frac{4}{5}x + 6x + 3x^5 - 3x^3 - 2$

9. Describe the degree and leading coefficient of the polynomial function using the graph.

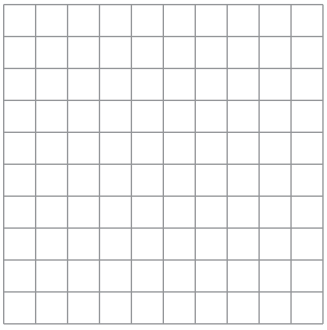


Name _____ Date _____

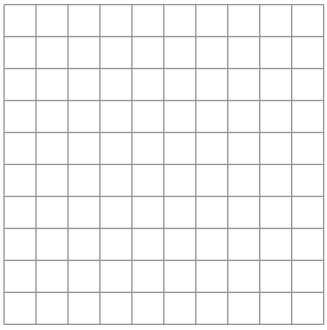
4.1 Notetaking with Vocabulary (continued)

In Exercises 10 and 11, graph the polynomial function.

10. $p(x) = 16 - x^4$



11. $g(x) = x^2 + 3x^5 - x$



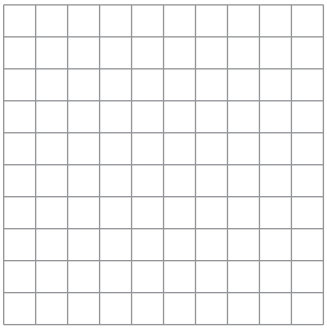
12. Sketch a graph of the polynomial function f if

f is increasing when $x < -1$ and $0 < x < 1$,

f is decreasing when $-1 < x < 0$ and $x > 1$,

and $f(x) < 0$ for all real numbers.

Describe the degree and leading coefficient of the function f.



13. The number of students S (in thousands) who graduate in four years from a university can be modeled by the function $S(t) = -\frac{1}{4}t^3 + t^2 + 23$, where t is the number of years since 2010.

a. Use a graphing calculator to graph the function for the interval $0 \leq t \leq 5$. Describe the behavior of the graph on this interval.

b. What is the average rate of change in the number of four-year graduates from 2010 to 2015?

c. Do you think this model can be used for years before 2010 or after 2015? Explain your reasoning.