NAME _____ DATE _____

Practice 56

FOR USE WITH SECTION 9.3

Use a graphing calculator or graphing software to graph each polynomial function. For each function:

a. Describe the end behavior using infinity notation.

b. Find all local maximums and local minimums. Round answers to the nearest tenth.

1. $f(x) = -2x^2 + 8x + 7$

2. $f(x) = \frac{1}{2}x^2 + 3x - 5$

3. $f(x) = 2x^3 - 3x^2 - 12x + 2$

4. $f(x) = x^4 - 8x^2 + x + 16$

5. $g(x) = -3x^4 + 8x^3$

6. $g(x) = 8x^5 - 5x^4 - 20x^3$

7. $g(x) = 3x^4 - \frac{4}{3}x^3 - 18x^2 + 36x$

8. $h(x) = x^5 + 4x^4 - 14x^3 - 36x^2 + 45x$

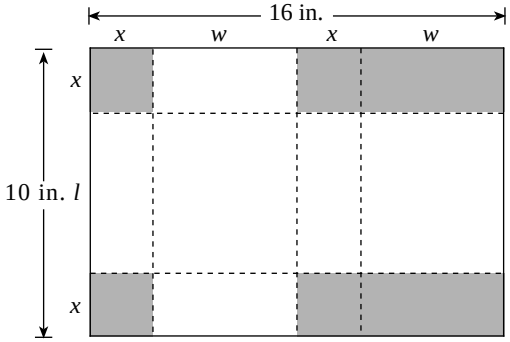
9. $h(x) = -6x^5 + 4x^4 + 3x^3 - x^2 + 5$

10. $h(x) = 0.1x^5 - 0.8x^4 - 0.9x^3 + 9.6x^2$

11. $f(x) = -x^6 + 11x^4 - x^2 + 50x$

12. $f(x) = 2x^6 - 11x^4 + 5x^3 - 3x^2 + x + 10$

13. A cardboard box with a top is to be made from a piece of cardboard measuring 16 in. by 10 in. Rectangles (shaded in the diagram) are to be cut away and the cardboard folded along the dotted lines to form the box.



a. Express w and l in terms of x, the length of the sides of the small squares.

b. Write the volume of the folded box as a function of x. (*Hint*: The volume of a rectangular prism is given by the formula $V = lwh$.)

c. Graph the function you wrote in part (b) using a graphing calculator or graphing software. Find all local maximums and local minimums.

d. On what domain does it make sense to consider this function as a volume function? What is the maximum value of the volume function on this domain?

14. Open-ended Problem How many times can the graph of a polynomial cross the x-axis? Answer this question by graphing polynomials of several different degrees. Relate your answer to the degree of the polynomial.