Name _____ Date _____

Practice 14

For use with Section 2-5

For Exercises 1–8, write an equation in the form $f(x) = kx^n$ for each direct variation function.

1. $k = 3.5$ and $n = 2$

2. $k = 1.6$ and $n = 5$

3. $f(3) = 54$ and $n = 2$

4. $k = 5$ and $f(2) = 80$

5. $f(2) = 32$ and $n = 6$

6. $k = 0.8$ and $f(5) = 100$

7. $f(0.5) = 1$ and $f(x)$ varies directly with the fourth power of x.

8. $f(1) = 2.5$ and $f(4) = 160$

For each polynomial function, write the degree and find the given value.

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

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

11. $g(x) = x^2 + 2x^3 - x^5 + 1; g(1)$

12. $h(x) = 6 - 3x^6 + x; h(-1)$

13. $k(x) = 12 - 5x^3 + x^4 - x^2; k(-2)$

14. $F(x) = x^5 - x^3 + x - 1; F(3)$

Graph each polynomial function. (Hint for Exercises 19 and 20: Factor.)

15. $f(x) = x(x - 3)^2$

16. $p(x) = x(x - 1)(x + 2)(x - 3)$

17. $g(x) = (x - 1)(x + 4)^2$

18. $h(x) = x^2(x - 4)$

19. $q(x) = x(x^2 - 6x + 9)$

20. $r(x) = x^4 + x^3 - 12x^2$

21. The maximum droop of one end of a steel beam that is supported at its other end varies directly as the fourth power of the length of the beam.

a. Write an equation for the droop $d(x)$ as a function of the length x of the beam, including a constant k.

b. Suppose the unsupported end of a beam 20 ft long droops by 0.0015 in. Find the value of k.