Name _____ Date _____

**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.** $f(x) = 4x^2 - 3x + 5x^3 - 7$

**2.** $h(x) = 5x^3 - 7x^{-2} + x - 1$

**3.** $g(x) = x^4 - \frac{1}{3}x^2 + 10 - 4x^3 + 2x$

**4.** $f(x) = 8x^2 - \sqrt{3}x + 2$

**In Exercises 5–7, evaluate the function for the given value of x.**

**5.** $f(x) = -2x^4 + x^3 + 5x^2 - 3x - 7;\ x = -1$

**6.** $g(x) = 5x^4 - 2x^3 + 9x - 10;\ x = -6$

**7.** $h(x) = x^5 - 4x^3 + 3x^2 + 11x - 8;\ x = 7$

**In Exercises 8 and 9, describe the end behavior of the graph of the function.**

**8.** $g(x) = 6x^4 - 3x^3 + 12x^2 + 8x + 2$

**9.** $h(x) = -5x^9 + 6x^7 - 5x^4 + x^2 - 1$
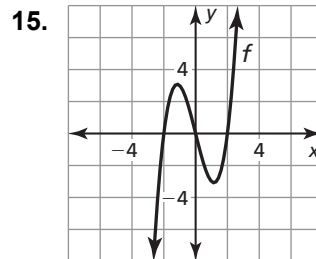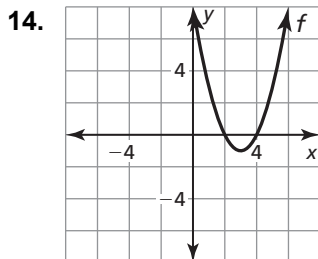
**In Exercises 10–13, graph the polynomial function.**

**10.** $q(x) = x^4 - 2$

**11.** $h(x) = x^3 - 2x + 3$

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

**13.** $f(x) = x^5 - 2x^3 + 1$

**In Exercises 14 and 15, describe the *x*-values for which (a) *f* is increasing or decreasing, (b) $f(x) > 0$, and (c) $f(x) < 0$.**

**14.**



**15.**



**16.** Suppose $f(x) \to -\infty$ as $x \to -\infty$ and $f(x) \to -\infty$ as $x \to +\infty$. Describe the degree and leading coefficient of the function.