Lesson 5.2 Worksheet

Name: ________________________________

Decide whether the function is a polynomial function. If so, write it in standard form and state its degree, type, and leading coefficient.

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

2.) $h(x) = x^3\sqrt{10} + 5x^{-2} + 1$

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

4.) $g(x) = \pi x^4 + \sqrt{6}$

Use direct substitution to evaluate the polynomial function for the given value of *x*.

5.) $f(x) = 8x + 5x^4 - 3x^2 - x^3;\ \ x = 2$

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

7.) $h(x) = 6x^3 - 25x + 20;\ \ x = 5$

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

Use synthetic substitution to evaluate the polynomial function for the given value of *x*.

9.) $f(x) = 5x^3 - 2x^2 - 8x + 16;\ \ x = 3$

10.) $f(x) = 8x^4 + 12x^3 + 6x^2 - 5x + 9;\ \ x = -2$

11.) $h(x) = -8x^3 + 14x - 35;\ \ x = 4$

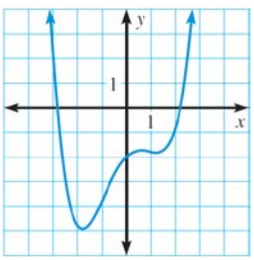
12.) $f(x) = -2x^4 + 3x^3 - 8x + 13;\ \ x = 2$

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

14.) $g(x) = 6x^5 + 10x^3 - 27;\ \ x = -3$

Describe the degree (even or odd) and leading coefficient (positive or negative) of the polynomial function whose graph is shown.

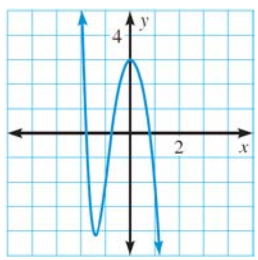
15.)



degree: ___________

leading coefficient: ___________

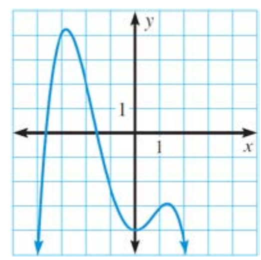
16.)



degree: ___________

leading coefficient: ___________

17.)



degree: ___________

leading coefficient: ___________

Describe the end behavior of the graph of the polynomial function by completing the statements. (Hint: Sketch a general picture of the graph to help).

18.) $f(x) = 0.2x^3 - x + 45$

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to -\infty}$

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to +\infty}$

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

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to -\infty}$

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to +\infty}$

20.) $f(x) = 10x^4$

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to -\infty}$

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to +\infty}$

21.) $f(x) = -6x^5 + 14x^2 + 20$

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to -\infty}$

$\boldsymbol{f(x) \to}$ ____ **as** $\boldsymbol{x \to +\infty}$