Honors Math II Name_____

Unit 5 day 1 Period_____Date_____

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

1. $f(x) = 8 - x^2$
2. $f(x) = 6x + 8x^4 - 3$
3. $g(x) = \pi x^4 + \sqrt{6}$
4. $h(x) = x^3\sqrt{10} + 5x^{-2} + 1$
5. $h(x) = -\frac{5}{2}x^3 + 3x - 10$
6. $8x^3 - 4x^2 + \frac{2}{x}$

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

7. $5x^3 - 2x^2 + 10x - 15\,; x = -1$
8. $g(x) = 4x^3 - 2x^5\,;\ x = -3$
9. $h(x) = x + \frac{1}{2}x^4 - \frac{3}{4}x^3 + 10\,; x = -4$

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

10. $f(x) = 5x^3 - 2x^2 - 8x + 16\,; x = 3$
11. $g(x) = x^3 + 8x^2 - 7x + 35\,; x = -6$
12. $f(x) = -2x^4 + 3x^3 - 8x + 13\,; x = 2$
13. $h(x) = -7x^3 + 11x^2 + 4x\,; x = 3$
14. $h(x) = -8x^3 + 14x - 35\,; x = 4$

Describe the end behavior and the intervals where the graph is increasing and decreasing. Graphing calculator is suggested or desmos.com

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

16. $f(x) = x^3$

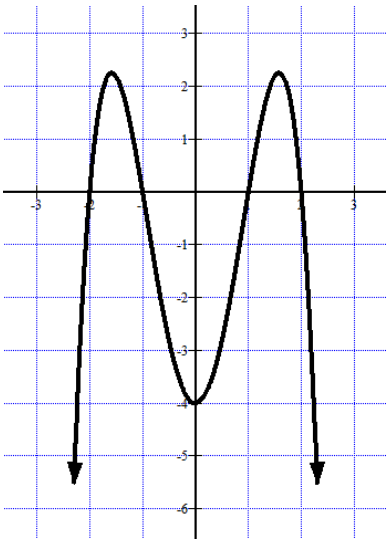
17. $f(x) = -x^4$

18. $f(x) = x^3 - 5x$

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

Describe the least degree of the polynomial function and state whether the leading coefficient is positive or negative for the given graphs.

20.



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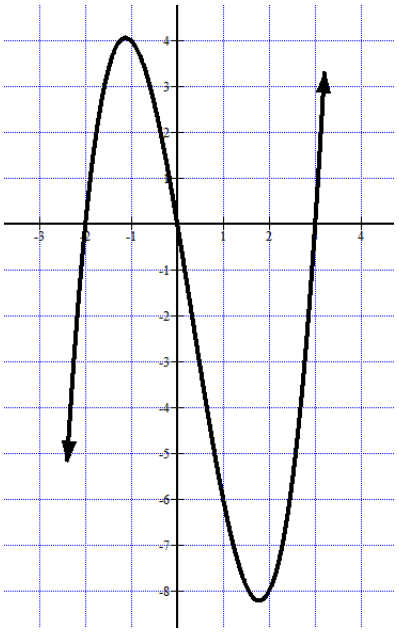

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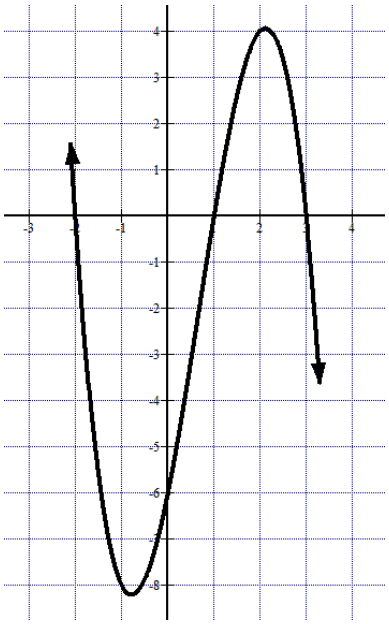

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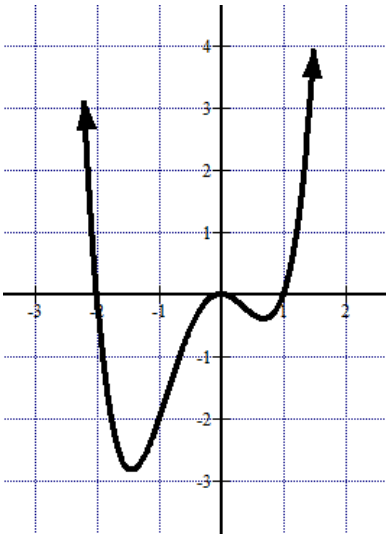

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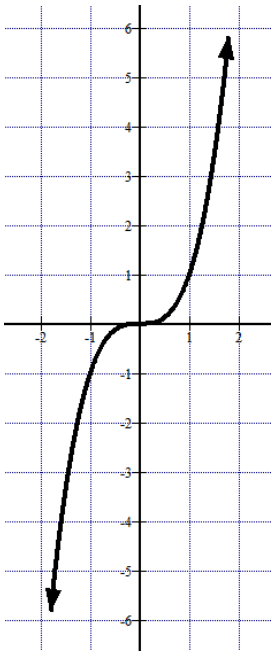

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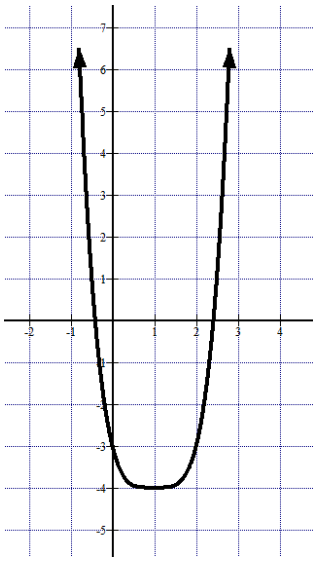


Factor the following polynomials completely.

26. $x^3 - 16x$

27. $4x^3 + 12x^2 + 8x$

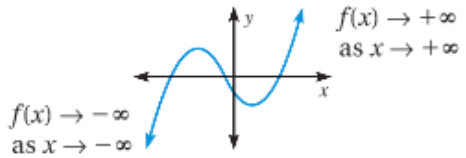
28. $8x^2 - 2x - 3$

29. $9 - x^2$

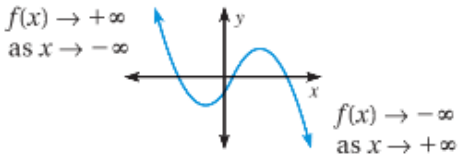
KEY CONCEPT *For Your Notebook*

End Behavior of Polynomial Functions

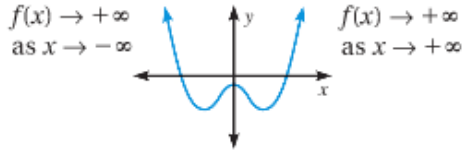
Degree: odd
Leading coefficient: positive



Degree: odd
Leading coefficient: negative



Degree: even
Leading coefficient: positive



Degree: even
Leading coefficient: negative