

Secondary Math III
Building Cubic Functions & Sketching Graphs
Assignment 3.4

Name _____

Period _____

Write a cubic function with the given characteristics. There should be no i 's in the final answer.

1. zeros: $-3, 0, 1$

2. zeros: $0, 3i, -3i$

3. zeros: 4 (multiplicity 2) and -2

4. zeros: 2 (multiplicity 3), $4i, -4i$

Use the degree and the leading coefficient to describe the left and right end behaviors of the graphs of the following polynomials:

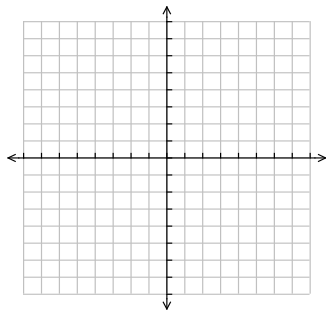
5. $f(x) = 2x^4 + 3x + 1$

6. $g(x) = 1 - x^5$

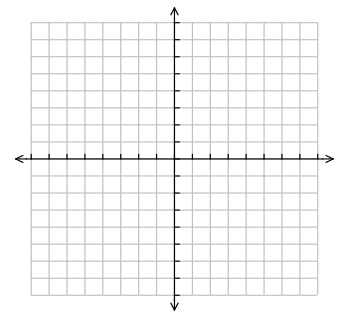
7. $h(x) = 3(x - 4)^2(x + 1)$

Determine the zeros (x -intercepts) and multiplicities. Identify the end behaviors and y -intercept. Then sketch the graph of the function.

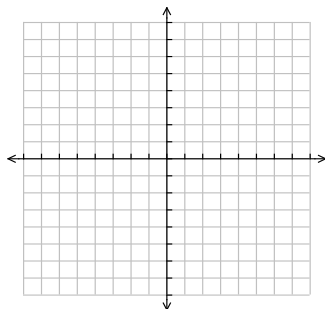
8. $f(x) = x(x + 2)(x - 4)$



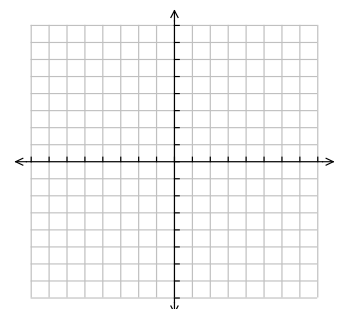
9. $f(x) = -x^2(x^2 - 9)$



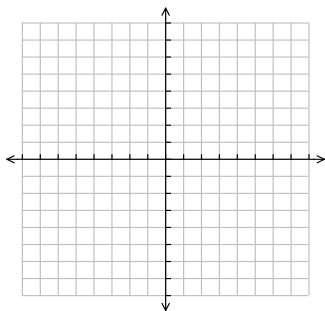
10. $f(x) = -x(x - 3)(x + 4)$



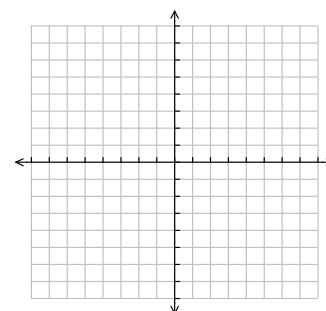
11. $f(x) = x^3 + 4x^2 - 12x$



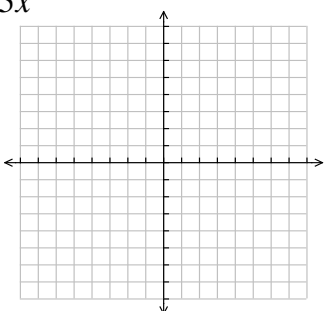
12. $f(x) = x^4 - 4x^2 - 5$



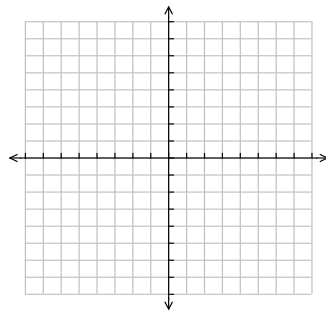
13. $f(x) = (x^2 - 1)(x^2 - 16)$



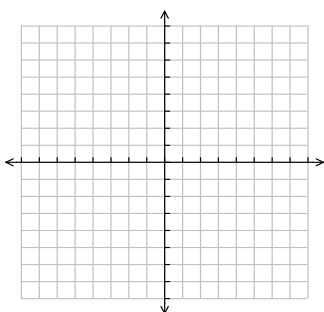
14. $f(x) = x^3 - 10x^2 + 25x$



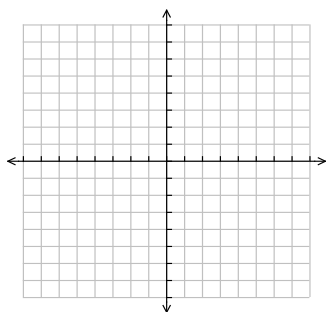
15. $f(x) = -(x+2)(x^2 - 6x - 8)$



16. $f(x) = -x^2(x^2 - 9x + 14)$



17. $f(x) = x^4 - 4x^2$



Sketch the graph of a polynomial function that satisfies the given conditions.

18. Third degree polynomial with two real zeros and a negative leading coefficient.

19. Fourth-degree polynomial with three real zeros and a positive leading coefficient.

20. Fifth-degree polynomial with three real zeros and a positive leading coefficient.

21. Fourth-degree polynomial with two real zeros and a negative leading coefficient.

