Algebra 2 4.5 - 4.9 Review Worksheet Name Per Date

Remember to review Quizzes #1 - #4 (Chapters 1 - 3 and 4.1 - 4.4)

In Exercises 1–4, solve the equation.

1. $q^3 - q^2 - 30q = 0$

2. $k^3 + 6k^2 + 9k = 0$

3. $3y^4 - 6y^3 = -3y^2$

4. $n^3 + 2n^2 - 9n - 18 = 0$

In Exercises 5–10, find the zeros of the function.

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

6. $g(x) = x^4 - 8x^2 + 16$

7. $f(x) = x^4 - 8x^2 - 9$

8. $f(x) = x^4 - 5x^2 - 36$

9. $g(x) = x^3 + 2x^2 - 5x - 6$

10. $f(x) = x^4 - 5x^3 + 7x^2 + 3x - 10$

In Exercises 11–13, write a polynomial function *f* of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros.

11. $-4, 1, 2$

12. $3, -\sqrt{7}$

13. $2, 3 + i$

In Exercises 14-17, describe the transformation of *f* represented by *g*.

14. $f(x) = x^3,\ g(x) = x^3 - 2$

15. $f(x) = x^3,\ g(x) = (x + 3)^3$

16. $f(x) = x^4,\ g(x) = -5x^4$

17. $f(x) = x^3,\ g(x) = 4x^3 - 3$

In Exercises 18-21, write a rule for *g* and describe the graph of *g* as a transformation of the graph of *f*.

18. $f(x) = x^3 + 2,\ g(x) = f(x - 1)$

19. $f(x) = x^4 - 3x + 1,\ g(x) = 2f(x)$

20. $f(x) = x^3 - 4x^2 + 2,\ g(x) = -\frac{1}{4}f(x)$

21. $f(x) = x^4 + x + 1,\ g(x) = f(-x) + 2$

In Exercises 22 - 24, write a rule for *g* that represents the indicated transformations of the graph of *f*.

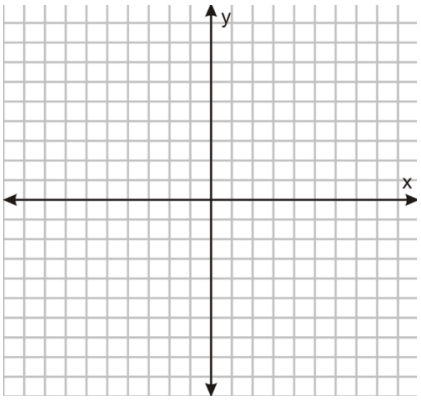
22. $f(x) = x^3 + 5$; translation 2 units right, followed by a reflection in the *x*-axis

23. $f(x) = x^4 - 3x + 1$; vertical shrink by a factor of $\frac{1}{3}$, followed by a translation 2 units down

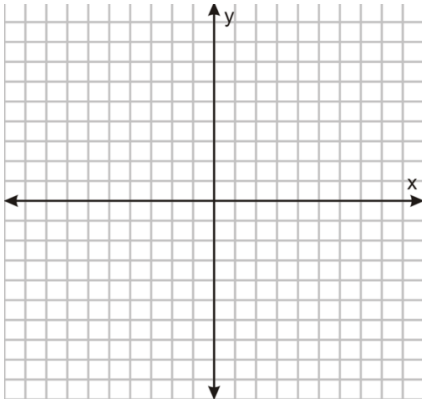
24. $f(x) = x^3 - 3x^2 + 2$; reflection in the *y*-axis and a horizontal stretch by a factor of 3, followed by a translation 3 units up

In Exercises 25 and 26, graph the function.

25. $f(x) = (x + 1)^2(x - 5)$

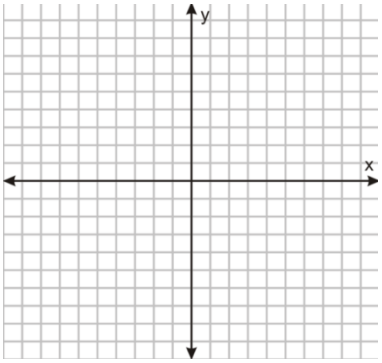


26. $g(x) = -(x - 1)^2(x + 1)(x + 4)$

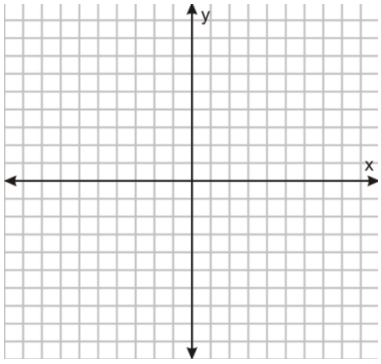


In Exercises 27 and 28, sketch the graph of a function with the given characteristics.

27. Degree 4 polynomial with 4 distinct real roots.



28. Degree 3 polynomial with a single real root and a double real root.

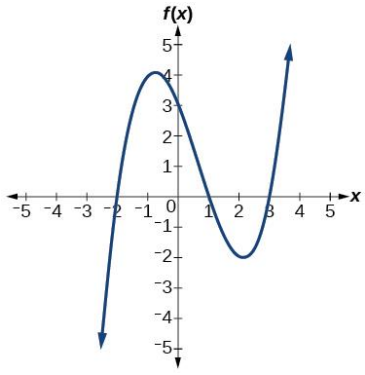


In Exercises 29 and 30, determine whether each function is even, odd, or neither.

29. $f(x) = x^3 - 8x^2 + 15x$

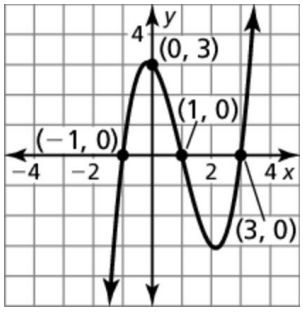
30. $f(x) = x^4 + 5x^2 - 8$

31. Use the graph to identify the x-intercepts, the local max, local min, the intervals where the function is increasing, and the intervals where the function is decreasing.



In Exercises 32 and 33, write a cubic function whose graph passes through the given points.

32.



33.