Honors Math II

Chapter 5 Review

Name_____

Date_____Period_____

Write a polynomial function of least degree that has rational coefficients, a leading coefficient of 1 and the given zeros.

1. $1, 2, 3$

2. $-2, 1, 3$

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

4. $5i, -5i$

5. $4, \sqrt{5}, -\sqrt{5}$

6. $-3, 1, 6$

7. $2, -2$

8. $4 + i, 4 - i$

9. $3 + 2i, 3 - 2i$

10. $7i, -7i$

Divide using long division.

11. $5x^4 + 2x^3 - 9x + 12 \div x^2 - 3x + 4$

12. $x^3 + 11x^2 + 25x - 21 \div x + 7$

Divide using synthetic division.

13. $2x^4 - 11x^3 + 15x^2 + 6x - 18 \div x - 3$

14. $x^4 - 6x^3 - 40x + 33 \div x - 7$

Factor completely.

15. $9y^2 - 64$

16. $5x^3 + 5x^2 + 30x$

17. $x^3 + 8y^3$

18. $5x^4 + 10x^2 - 15$

19. $2x^3 - 3x^2 + 4x - 6$

20. $x^3 + 3x^2 - 4x - 12$

21. $64x^3 - 27y^3$

22. $x^4 - 13x^2 + 36$

23. $15x^3 + 14x^2 - 3x - 2$ if (x + 1) is one of the factors.

24. $x^3 - x^2 - 8x + 12$ if (x + 3) is one of the factors.

Solve.

25. $x^4 - 9x^2 + 14 = 0$

26. $10x^4 - 160 = 0$

27. $6x^2 + 11x - 35 = 0$

28. $12x^2 - 21x - 45 = 0$

Write the end behavior for the polynomial function.

29. $g(x) = 2x^3 - 3x + 1$

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

31. $h(x) = x^4 - 4x + 2$

32. $f(x) = -6x^8 - 25$

Decide whether the function is a polynomial function. If so, state its degree, type (constant, linear, quadratic, etc.), and leading coefficient.

33. $f(x) = 78$

34. $g(x) = -2x^3 - 2x^2 + 3$

35. $g(x) = 4x^2 - x^{-2} + 3$

36. $f(x) = -8 + 3x + x^4 - x^2$

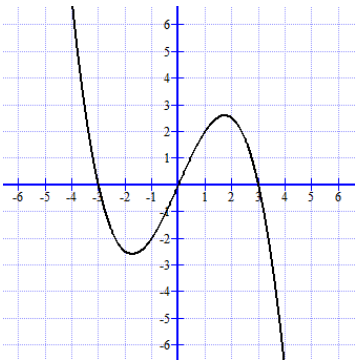
Perform the indicated operation.

37. $(x^3 + x^2 - 6) - (2x^2 + 4x - 8)$

38. $(-3x^2 + 4x - 10) + (x^2 - 9x + 15)$

39. Write a cubic function whose graph passes through the points.
$(3, 0), (-3, 0), (4, 0), (0, 36)$

40. Write a cubic function whose graph is shown.



Simplify.

41. $\left(\frac{3}{5}\right)^{-2}$

42. $\left(\frac{2}{3^{-2}}\right)^{2}$

43. $(x^4y^{-2})(x^{-3}y^8)$

44. $(a^2b^{-5})^{-3}$

45. $(-3c^3d^4e^6)^2$

46. $\frac{12x^{-3}}{y^4} \cdot \frac{(y^{-2}x^2)^{-2}}{15x^{-2}}$

47. $\frac{x^3y^7}{x^{-4}y^0}$

48. $\frac{c^3d^{-2}}{c^5d^{-1}}$