

Chapter 3 Review

Write a polynomial function of least degree with integral coefficients that has the given zeros.

1) 4, $2+i$, $2-i$

2) 1, $1+i$, $1-i$

A polynomial function with rational coefficients has the follow zeros. Find all additional zeros.

3) -4, 1, $-2i$

4) -3, -5, $2+i$

Find all roots(zeros)

5) $x(2x+1)(x-3)=0$

6) $x(3x-1)(x+4)=0$

7) $x^2(x+2)(x^2+4)(x^2-3)=0$

8) $(x^2-6)(x^2+9)=0$

State the possible rational zeros for each function. Then find all rational zeros.

9) $f(x) = 5x^3 + x^2 - 5x - 1$

10) $f(x) = 2x^3 + x^2 - 2x - 1$

11) $f(x) = 9x^3 + 15x^2 + 10x + 2$

12) $f(x) = 2x^3 + 3x^2 - 1$

Describe the end behavior of each function.

13) $f(x) = -x^5 + 3x^3 + 2$

14) $f(x) = -x^4 + 4x^2 + 2x$

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

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

Sketch the general shape of each function.

17) $f(x) = x^2 + 2$

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

19) $f(x) = -2x^2 - 16x - 27$

20) $f(x) = x^3 - 3x^2 + 3$

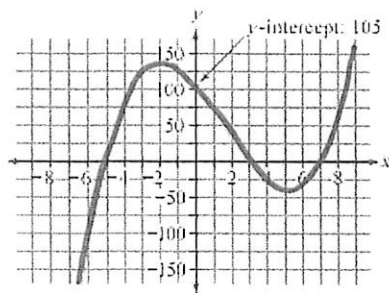
21) $f(x) = -x^4 + x^2 + x + 1$

22) $f(x) = -x^3 + 4x^2 - 6$

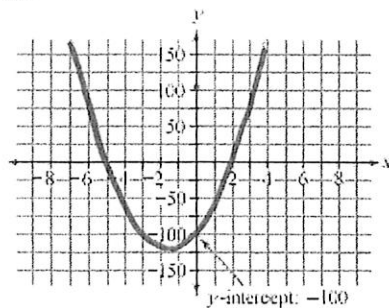
For #23-26,

- Identify the zeros of each function.
- Give the coordinates of the y-intercept of each graph.
- Identify the lowest possible degree of each polynomial function.
- Write the factored form for each polynomial function.

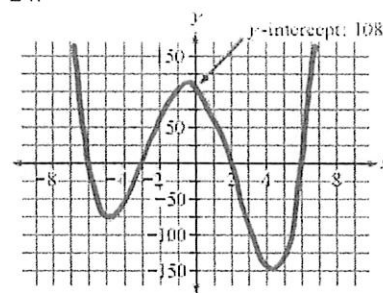
23.



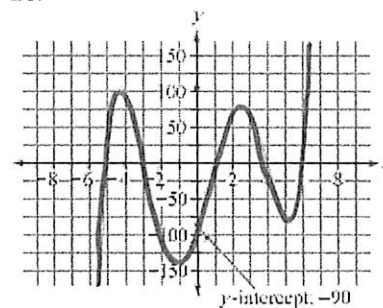
25.



24.

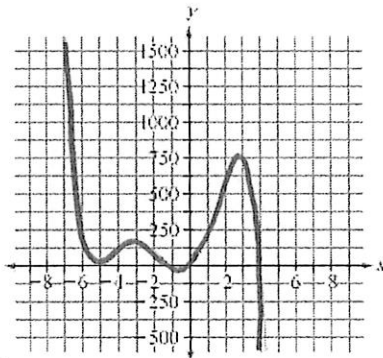


26.



27. Given the graph:

- What is the lowest possible degree?
- Identify the zeros (as coordinates)
- What is the coordinate of the y-intercept?
- Write the equation for the polynomial in factored form (the graph as the point (1, 216))



Graph the following functions and label: a) y-intercept, b) zeros c) Linear factors

28. $f(x) = x^3 + 9x^2 + 6x - 56$

29. $f(x) = x^4 - 2x^3 - 17x^2 + 4x + 30$

30. $f(x) = -x^3 - 7x$

31. $f(x) = x^3 + 6x^2 + 9x$

Review

© 2011 Kuta Software LLC. All rights reserved.

Name each polynomial by degree and number of terms.

1) $8n^3 - 4n + 1 - 10n^2$

2) $4v - 7$

3) $3x^2 + x + 4x^5 - 8x^4 + 8x^3$

4) $-8m^6 - 3$

5) $-6x^4$

6) $3p + 8 + 2p^2$

Simplify each expression.

7) $(7p^3 + 8p^2 - 7p^4) + (5p^4 - 5p^2 - 3p^3)$

8) $(7 + 5x^4 + 4x) - (x^4 - 5x - 8x^3)$

9) $(2x - 4x^5 - 10x^4) + (x^4 + 4x - 14x^5)$

10) $(-7r + 5r^3 - 10r^4) + (10r^3 - 7r^5 + 13r^4)$

Factor each completely.

11) $x^4 - 2x^2 - 48$

12) $2x^4 + 26x^2 + 72$

13) $a^4 + 3a^2 + 2$

14) $x^4 - 4x^2 - 21$

15) $10n^3 + 14n^2 - 35n - 49$

16) $40x^3 + 35x^2 + 16x + 14$

17) $5p^3 - 4p^2 + 5p - 4$

18) $3x^4 + 20x^2 + 32$

19) $108x^3 - 32$

20) $24u^3 + 3$

21) $2x^6 + 54$

22) $16x^3 - 250$

Find all zeros.

23) $f(x) = x(x + 1)(x^2 + 3)$

24) $f(x) = x(x - 2)(x^2 - 2)$

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

26) $f(x) = (x+5)(x+3)$

27) $f(x) = x^3 - 5x^2 - 5x + 25$

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

29) $f(x) = x^3 - 8$

30) $f(x) = x^3 - 64$

31) $f(x) = x^4 + 2x^2 - 63$

32) $f(x) = x^8 - 29x^4 + 100$

Simplify

33) $(-4x^5)(4x^2)$

34) $(3y^4)(-6y^3)$

35) $\left(\frac{-4m^2}{tp^2}\right)^4$

36) $-\left(\frac{p^2q^3}{r^3}\right)^6$

Polynomial or not? Degree, monomial, binomial, trinomial

37) $-7z^5 - 2z^3 + 1$

38) $-9t^4 + 8t^3 - 7$

Perform operation

39) $(6m^4 - 3m^2 + m) - (2m^3 + 5m^2 + 4m)$

40) $(2x+3)(2x-3)(x-9)$

Chapter 3 Review continued . . .

Factor Completely.

36. $2x^3 + 3x^2 - 8x - 12$

37. $4x^2 - 36$

38. $27d^3 - 8$

39. $5n^3 + 625$

40. $25x^4 - 81y^2$

41. $g^2 - 16$

Divide using synthetic division.

42. $(x^7 + x^5 - 10x^3 + 12) \div (x + 2)$

43. $(x^5 + x^3 - 2) \div (x - 1)$

Translations ?

44. $f(x) = \frac{1}{2} (x-2)^2 - 3$

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