6.1 - 6.5 WS Answers.pdf

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1) Write in standard form and identify by degree and number of terms:

$a)\ 3x^3 + x^2 - 4x + 3x^3$

$b)\ (x^2 + 2x)^2$

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2) Use your calculator to decide whether the data best fits a quadratic, cubic, or quartic model

X	1	10	20	30
Y	91	95	260	365

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3) For the following polynomials,

A) State the end behavior
B) State the zeros and their multiplicity
C) Sketch a graph

$a)\ -6x^3 - 15x^2 + 36x$

$b)\ x^4 - 16x^2$

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4) Write a polynomial in standard form with zeros at 2 and -5*i*.

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5) Use your calculator to find the approximate zeros, relative maximum and relative minimum of:

$a)\ y = 8x^3 - 10x^2 - x - 3$

$b)\ x^4 - x^2 = -3x^3 + 3x$

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6) Divide using LD and state the quotient:

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

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7) Use SD and the given factor to factor the polynomial completely.

$(3x^3 + 17x^2 + 21x - 9)\ ;\ (x + 3)$

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8) Use synthetic division to evaluate f(-2) for:

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

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9) Factor and Solve (no calc):

$a)\ 2x^3 - 2 = 0$

$b)\ x^4 - 16 = 0$

$c)\ x^4 - 7x^2 + 12 = 0$

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10. Use the Rational Root Theorem to list all the possible rational roots of:
$f(x) = 3x^4 + 2x^3 - x + 15$

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11. A zero of the function $f(x) = x^3 - 5x^2 + 11x - 15$ is 3. Find the other two zero's.

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12. Find all the roots of: $x^4 - x^3 + 2x^2 - 4x - 8 = 0$

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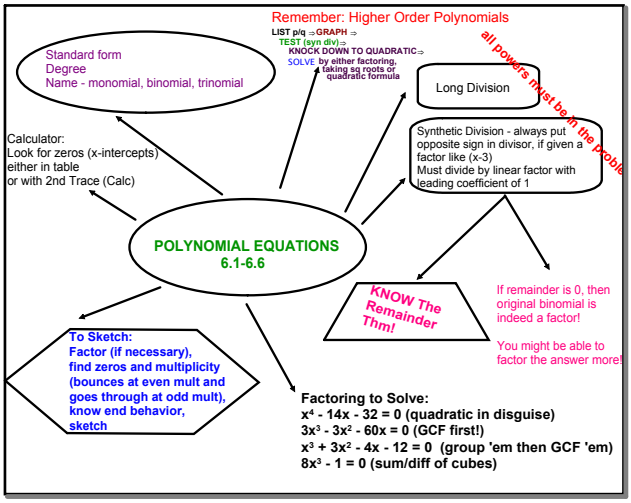

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Optional Book Review

p. 359 (6 - 51)

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Write each polynomial in standard form. Then classify it by degree and by number of terms.

6. $p^3 - 2p + 2p^3$ **7.** $3 - 5x^9$ **8.** $x - x^3 - x^5$

9. $3x + 2x^2 - x + 4x^3$ **10.** $5 + x + x^4 - x^2 + x^7$ **11.** s

12. Find both a cubic and a quartic model for the set of values. Graph each model. Compare the two models to determine which is a better fit.

x	1.2	1.4	1.6	1.8	2.0	2.2
y	3.1	−4.2	4.1	7.5	−8.9	10

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Write each polynomial function in factored form. List the zeros of the function, and their multiplicity. Find any relative maximum or relative minimum values. Round to the nearest hundredth if necessary.

13. $f(x) = x^3 - x^2 - 12x$ **14.** $g(x) = 4 - x^2$ **15.** $y = x^3(x + 2)^4$

Write a polynomial function in standard form with the given zeros.

16. $-3, -2, 0, 2$ **17.** $1, 1, 2$ **18.** $-3, 0, 0, 1$ **19.** $-2, -2, -2$

Divide. Use both long division and synthetic division. Show your work.

20. $(x^3 + 3x^2 - 2x - 4) \div (x - 2)$ **21.** $(x^4 - x + 2) \div (x + 1)$

Use synthetic division and the given factor to completely factor each polynomial.

22. $x^3 - 3x^2 - x + 3; x + 1$ **23.** $x^3 - 4x^2 - 3x + 18; x - 3$

Use synthetic division and the Remainder Theorem to find $P(a)$.

24. $P(x) = x^4 + x^3 - x^2 - 2x; a = 3$ **25.** $P(x) = 4 - x - x^5; a = 2$

26. $P(x) = 5x^4 - x^2 + 1; a = -2$ **27.** $P(x) = x^3 - 8x^2 + 5x - 7; a = 1$

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Solve each equation by graphing. If necessary, round to the nearest hundredth.

28. $x^3 - 4x^2 + 5 = 0$ **29.** $x - 3 = 4 - x^2 + x^3$ **30.** $x^3 + x = 3x^2 - 3x^3$

31. $x^3 + x + 5 = 0$ **32.** $-5 = 2 - x^2 + x^3$ **33.** $x^3 + 4 = x^3 - 3x^2$

Factor the expression on the left side of each equation. Then solve each equation.

34. $x^3 - 8 = 0$ **35.** $4t^6 - t^4 = 0$ **36.** $8x^3 + 1 = 0$

37. $x^3 - 5x^2 + 4x = 0$ **38.** $x^3 - 2x^2 - 5x = 0$ **39.** $x^6 + 16x^3 + 64 = 0$

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For each equation, state the number of complex roots, the possible number of real roots, and the possible rational roots. Then find all the roots.

40. $x^3 - 6x^2 + 11x - 6 = 0$

41. $10x^4 - 13x^3 - 21x^2 + 10x + 8 = 0$

42. $x^4 - 6x^2 + 7 = 0$

43. $x^4 + 6x^3 + 13x^2 + 12x + 4 = 0$

44. $x^3 - 3x^2 + x + 5 = 0$

45. $x^4 - 2x^3 - 7x^2 + 18x - 18 = 0$

Write a polynomial equation of least possible degree, with integer coefficients, that has the given numbers as roots.

46. $2, i, -i$

47. $4 + \sqrt{2}, 4 - \sqrt{3}$

48. $3 + i, 2 - i$

49. $0, -2i, 3 + \sqrt{2}$

50. $1 + 2i, 3 - \sqrt{3}$

51. $\sqrt{5}, -\sqrt{7}$

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9 $y = x^4 + 6x^3 + 8x^2$

$x^2(x^2 + 6x + 8)$

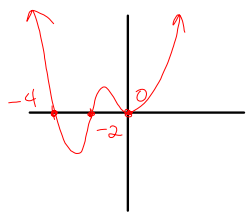
$x^2(x + 4)(x + 2) = 0$

$x = 0$
mult of 2
bounce

$x + 4 = 0$
$x = -4$
mult of 1
through

$x + 2 = 0$
$x = -2$
mult of 1
through

EB



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5 $y = (x-8)^3(x-1)^4$

highest degree: $3+4=7$

leading coeff $+$

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Attachments

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