Alg 2A Final Exam Review Spring 2017

Chapter 6

1. Find ALL Complex solutions, real and imaginary, using factoring.

a) $2x^5 - 10x^3 - 72x = 0$ b) $3x^3 - 2x^2 + 18x - 12 = 0$ c) $5x^5 - 80x = 0$

2. State the Degree(actual NUMBER) and Leading Coefficient (actual NUMBER) of each polynomial.

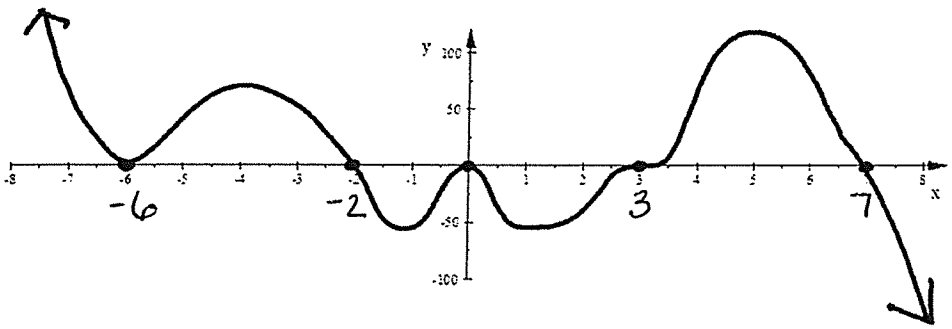
a) $5x^3 - 3x^2 + x^5 - 9x + 12$ b) $-10x^2(5x+6)^2(2x-1)^3(x+3)$

3. State the end behavior of each polynomial.

a) $y = 5x^4 + 6x^3 - 7x + 1$ b) $y = -x(x+6)^2(x-7)^2(x+4)$

c) $y = -2x^5 + 8x^4 - 9x^2 + 10x$ d) $y = x^3(x+3)^2(x+7)(x-1)$

4. Write the equation of the polynomial shown in the graph.



5. Find each quotient. You can leave remainders any way you wish.

a) $\dfrac{3x^4 - 8x^3 + 7x^2 + 4x - 9}{x - 2}$ b) $\dfrac{8x^3 + 22x^2 - 25x + 3}{4x - 3}$

6. Use the fact 3 and –4 are zeros to find the remaining Complex roots, real and imaginary, of this polynomial.

$y = x^4 + x^3 - 6x^2 + 6x - 72$

7. Graph the following polynomial and find ALL real zeros and the coordinates of ALL Extrema. Round to the nearest hundredth.

$y = 0.01x^4 - 0.03x^3 - 0.41x^2 + 0.03x - 1.6$

8. Is $x - 2$ a factor of $f(x) = 2x^3 + 3x^2 - 18x + 8$? Give a reason for your answer.

9. Make a list of possible rational roots of this polynomial: $f(x) = 3x^3 - 4x^2 - 13x - 6$

10. Two roots of a fourth degree polynomial are $2i$ and $-\sqrt{5}$. Write this polynomial in STANDARD FORM.

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1. a) $x = 0, \pm 3, \pm 2i$ b) $x = \pm i\sqrt{6}, \frac{2}{3}$ c) $x = 0, \pm 2, \pm 2i$
2. a) Degree=5, LC = 1 b) Degree=8, LC= −2000
3. a) (↖,↗) b) (↙,↘) c) (↖,↘) d) (↙,↗)
4. $y = -x^2(x+6)^2(x+2)(x-3)^3(x-7)$
5. a) $3x^3 - 2x^2 + 3x + 10$ $R = 11$ b) $2x^2 + 7x - 1$
6. Other roots are $\pm i\sqrt{6}$
7. zeros: $x = -5.51, 8.23$ Abs Max: None Rel Max: $(0.04, -1.60)$

Abs Min: $(5.78, -9.76)$ Rel Min: $(-3.56, -3.94)$

8. Yes $x - 2$ is a factor. If you divide by $x - 2$ the remainder is zero, or, if you use the remainder theorem, $f(2) = 0$ which means that the remainder is zero.
9. Possible rational roots are: $\pm 1, \pm 2, \pm 3, \pm 6, \pm\frac{1}{3}, \pm\frac{2}{3}$
10. $y = x^4 - x^2 - 20$