Algebra 2 Chapter 6 Review Fall 2013

1. Is each a polynomial?

a) $y = -4x^2 - 6x$ b) $f(x) = 7\sqrt{x} + 3x^5$ c) $y = 6x^4 - 7x^{-2} + 3$ d) $f(x) = 3x^{\frac{1}{2}} + 2x$

e) $y = -2.67x^2 - 7x + \sqrt{3}$ f). $f(x) = 9x^4 + \frac{5}{x^3} - 8x^2$ g) $y = 2x^2 - 3ix + 8$

2. Name each polynomial by its degree and by the number of terms.

a) $f(x) = 9x^3$ b) $y = 7x^2 - 6x + 1$ c) $f(x) = 4x + 10$ d) 23

3. State the degree, leading coefficient (for expanded form state the actual LC and for factored form just state if LC is pos or neg), and the end behavior of each polynomial.

a) $y = 6x^3 - 9x^2 - 2x + 1$ b) $f(x) = 2x(5x - 3)^2(x + 2)^3(x - 1)^2$

c) $y = -3x^4 + 7x^3 - 19x + 3$ d) $f(x) = (x + 7)^3(2 - x)(x + 4)$

4. Find all Absolute Max and Min (if any), Relative Max and Min (if any), and zeros of this funciton:

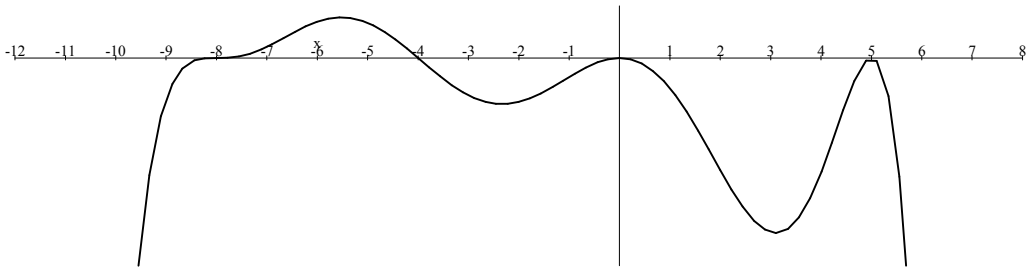
$y = 0.5x^4 - 4.5x^2 + 2x + 8$

5. Sketch each function showing the proper end behavior and shape at each zero.

a) $f(x) = x^2(x + 6)^3(x - 4)(x - 8)^2$

b) $y = -(x + 2)^2(2x - 7)(x - 8)^2$

6. Write a possible equation for the polynomial graphed below.



7. Find all solutions, both real and imaginary, by factoring. Give answers in simplified radical form where necessary.

a) $x^4 - x^2 - 12 = 0$ b) $5x^5 + 20x^3 - 60x = 0$ c) $2x^3 - 18x - 3x^2 + 27 = 0$

8. Find each quotient.

a) $\frac{7x^3 + 4x^2 - 8x + 5}{x + 6}$ b) $\frac{12x^3 + 38x^2 - 58x + 15}{6x - 5}$

9. Is $x - 2$ a factor of $3x^4 + x^3 - 15x^2 + 7x - 10$?

10. Find all real solutions by graphing. Round to the nearest hundredth.
$x^3 + 2x^2 - 7x + 4 = -x + 3$

11. -2 is a zero of the function: $y = x^3 - 6x^2 + 9x + 50$. Find the other two zeros of this function using polynomial division and the quadratic formula.

12. Use factoring and the quadratic formula to find all three solutions to this cubic equation.
$8x^3 - 27 = 0$

Algebra 2 Chapter 6 Review ANSWERS Fall 2013

1. a) Yes b) No c) No d) No e) Yes f). No g) No

2.

	Name by degree	Name by # of terms
a)	Cubic	Monomial
b)	Quadratic	Trinomial
c)	Linear	Binomial
d)	Constant	Monomial

3. a) Degree = 3 Leading Coefficient = -6
End Behavior As $x \to -\infty, y \to -\infty$ or $(\swarrow, \nearrow)$
As $x \to \infty, y \to \infty$

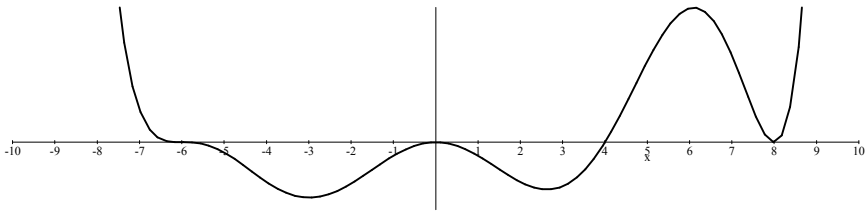
b) Degree = 8 Leading Coefficient = Pos (50)
End Behavior As $x \to \pm\infty, y \to \infty$ or $(\nwarrow, \nearrow)$

c) Degree = 4 Leading Coefficient = -3
End Behavior As $x \to \pm\infty, y \to -\infty$ or $(\swarrow, \searrow)$

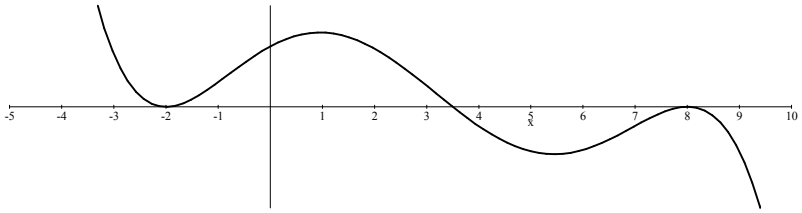
d) Degree = 5 Leading Coefficient = Neg (-1)
End Behavior As $x \to -\infty, y \to \infty$ or $(\nwarrow, \searrow)$
As $x \to \infty, y \to -\infty$

4. Abs Max: None Abs Min: -6.47 Rel Max: 8.22 Rel Min: 2 Zeros: $-2.91, -1.22$

5. a)



5. b)



6. $y = x^2(x-5)^2(x+4)(x+8)^3$

7. a) $x^4 - x^2 - 12 = (x^2-4)(x^2+3) = (x-2)(x+2)(x^2+3) = 0$, Solutions are: $x = \pm i\sqrt{3}, \pm 2$
b) $5x^5 + 20x^3 - 60x = 5x(x^2+6)(x^2-2) = 0$, Solutions are: $x = 0, \pm i\sqrt{6}, \pm\sqrt{2}$
c) $2x^3 - 18x - 3x^2 + 27 = (x^2-9)(2x-3) = (x+3)(x-3)(2x-3) = 0$, Solutions are: $x = \pm 3, \frac{3}{2}$

8. a) $7x^2 - 38x + 220$ R= -1315 b) $2x^2 + 8x - 3$ 9. Yes, the remainder is zero.

10. $x = -3.70, 0.18, 1.52$ 11. $4 \pm 3i$ 12. $x = \frac{3}{2}, \frac{-3 \pm 3i\sqrt{3}}{4}$