Hon Alg 2 Review Sec 6-1, 6-2, 6-4 Fall 2016

1. Is each a polynomial. If not circle the part(s) of the equation or explain why it is not.

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 it 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, and the end behavior of each polynomial. For degree and leading coefficient give the actual number not just Odd/Even, Pos/Neg.

a) $y = 6x^3 - 9x^2 - 2x + 1$ b) $f(x) = 2x(7x-3)^2(x+2)^3(x-1)^2$

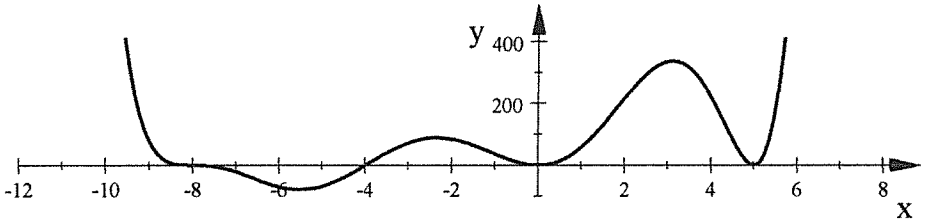
c) $y = 7x^3 - 19x - 3x^4 + 3$ d) $f(x) = (2x+7)^2(2-x)^3(5x+4)^2$

4. Sketch each function showing the proper end behavior and shape at each zero. Identify each zero with a number.

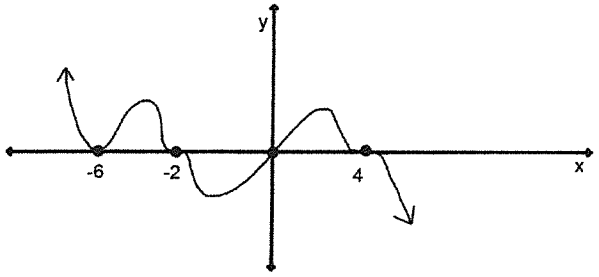
a) $f(x) = x^2(x+6)^3(4-x)(x-8)^2$ b) $y = (x+2)^2(2x-7)(x-8)^2$

5. Write the given kind of equation for each polynomial shown below in factored form.

a. A possible equation.



b. The EXACT equation given the polynomial passes through this point $(1, 107163)$.



6. Use the given zeros to write a possible equation of the polynomial in Standard Form:

Zeros: -2(single), 2(single), and 5(double)

7. Factor each completely.

a) $2x^5 - 162x$ b) $16x^4 - 1$ c) $x^4 - 14x^2 - 32$ d) $3x^5 - 12x^3 - 63x$

e) $4x^3 - 6x^2 + 14x - 21$ f) $x^3 - 125$ g) $8x^3 + 27$

8. Find ALL Complex solutions (both real and imaginary) by either factoring or graphing. Round real answers to the nearest hundredth and give imaginary answers in simplified radical form.

.a) $2x^4 - 2x^2 - 24 = 0$ b) $5x^5 + 20x^3 - 60x = 0$ c) $2x^3 - 18x - 3x^2 + 27 = 0$ d) $8x^5 - 648x = 0$

e) $64x^3 - 1 = 0$ f) $x^4 - 8x^2 + 16 = -x^2 + 4x - 1$

9. Find the coordinates of all absolute and relative extrema, if any.

$y = 0.5x^4 - 4x^3 + 8.5x^2 - 4x + 3$

Hon Alg 2 Review Sec 6-1, 6-2, 6-4 Fall 2016 ANSWERS

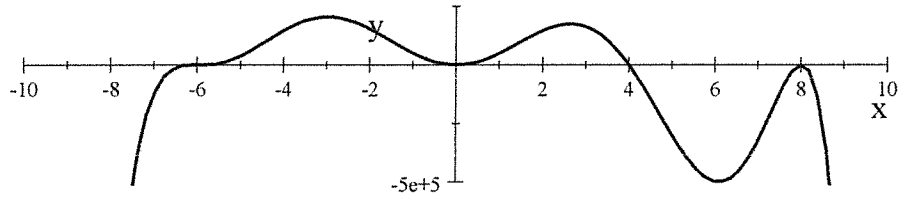
1. a) Yes b) No (variable under radical) c) No (negative exponent) d) No (fractional exponent)
e) Yes f). No (variable in the denominator) g) No (imaginary coefficient)

2.

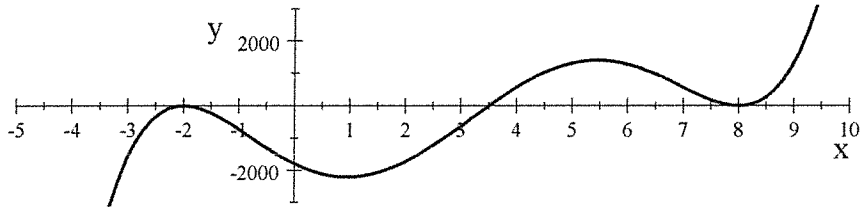
	Name by degree	Name by # of terms
a)	Cubic	Monomial
b)	Quadratic	Trinomial
c)	Linear	Binomial
d)	Constant	Monomial

3. a) Degree = 3 Leading Coefficient = 6
End Behavior $(\swarrow, \nearrow)$
b) Degree = 8 Leading Coefficient = 98
End Behavior $(\nwarrow, \nearrow)$
c) Degree = 4 Leading Coefficient = −3
End Behavior $(\swarrow, \searrow)$
d) Degree = 7 Leading Coefficient = −100
End Behavior $(\nwarrow, \searrow)$

4. a)



4. b)



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

6. $y = x^4 - 10x^3 + 21x^2 + 40x - 100$

7. a) $2x^5 - 162x = 2x(x-3)(x+3)(x^2+9)$
b) $16x^4 - 1 = (2x-1)(2x+1)(4x^2+1)$
c) $x^4 - 14x^2 - 32 = (x+4)(x-4)(x^2+2)$
d) $3x^5 - 12x^3 - 63x = 3x(x^2+3)(x^2-7)$
e) $4x^3 - 6x^2 + 14x - 21 = (2x-3)(2x^2+7)$
f) $x^3 - 125 = (x-5)(5x+x^2+25)$
g) $8x^3 + 27 = (2x+3)(4x^2-6x+9)$

8. a) $2(x \pm 2)(x^2+3) = 0$, Solutions are: $x = \pm i\sqrt{3}, \pm 2$
b) $5x(x^2+6)(x^2-2) = 0$, Solutions are: $x = 0, \pm i\sqrt{6}, \pm 1.41$
c) $(x \pm 3)(2x-3) = 0$, Solutions are: $x = \pm 3, \frac{3}{2}$
d) $8x(x \pm 3)(x^2+9) = 0$, Solutions are $x =: \pm 3, \pm 3i, 0$
e) $(4x-1)(16x^2+4x+1) = 0$, Solutions are: $x = \frac{1}{4}, \frac{-1 \pm i\sqrt{3}}{8}$
f) Solve by graphing: $x = 1.53, 2.39$

9. Abs Max: NONE Rel Max: $(1.71, 5.29)$ Abs Min: $(4, -5)$ Rel Min: $(0.29, 2.46)$