

Algebra 2 Review Chapter 6 Fall 2014

1. Is each a polynomial?

a) $y = 5ix^2 + 9x + 6$

b) $f(x) = 10x^4 + 60x^{\frac{2}{3}} - 9$

c) $f(x) = 3x^6 - 7x + \frac{8}{x^2} + 90$

d) $y = -\sqrt{11} + 9.6x^2 - \frac{13}{17}x^5$

e) $f(x) = 8x^3 + 4\sqrt{x} - 9x^2 + 8$

f) $y = 7x^5 - 8x^2 + 68x^{-1} + 19$

g) $y = 7.1x^2 - \frac{5}{9}x$

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

a) $f(x) = -19x + 1$

b) $y = 4x^3 - 9x$

c) $f(x) = -3.1$

d) $\frac{3}{7}x^2 - 9x + 13.8$

3. State the degree, leading coefficient, and the end behavior of each polynomial.

a) $y = -14x^4 + 9x^3 - 7x^5 - 9x + 4$

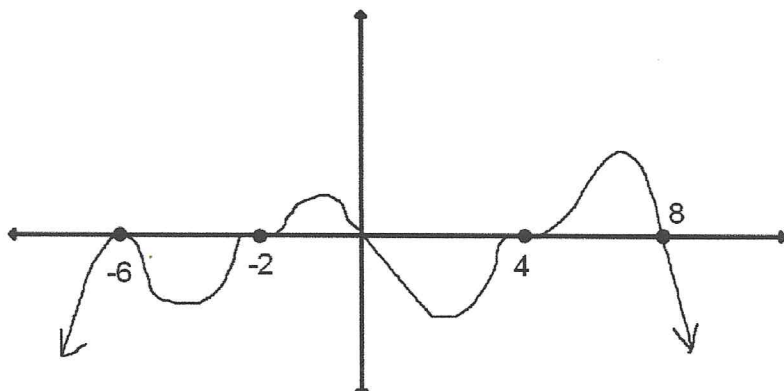
b) $f(x) = -8x^2(5x + 1)(6 - x)^3(4x + 7)^2$

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

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

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

5. Write a polynomial in factored form from the graph below.



6. Factor each.

a) $5x^5 + 5x^3 - 100x$

b) $9x^4 + 62x^2 - 7$

c) $x^4 - 22x^2 - 75$

d) $4x^5 + 16x^3 - 48x$

e) $15x^3 - 10x^2 + 9x - 6$

f) $x^3 + 64$

g) $27x^3 - 125$

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

a) $x^4 - 23x^2 - 50$

b) $3x^5 + 3x^3 - 36x$

c) $3x^3 - x^2 - 48x + 16$

d) $6x^5 + 18x^3 - 168x$

e) $27x^3 - 8$

8. Expand each. Simplify.

a) $(m - n)^5$ b) $(x - 3)^4$ c) $(2a + 3b)^4$

9. Find each quotient using any method you wish. Give remainder in any form.

a) $\frac{4x^3 - 9x^2 + 2x - 10}{x + 3}$ b) $\frac{6x^3 - 13x^2 + 26x - 43}{3x - 5}$ c) $\frac{4x^4 + 12x^3 - 9x^2 - 3x + 2}{4x^2 - 1}$

10. Is $x - 4$ a factor of $3x^3 - 17x^2 + 21x - 7$? Give a reason for your answer.

11. Find just the remainder of this quotient. $\frac{8x^3 - 2x^2 + 9x + 5}{x - 2}$

12. Given $x + 3$ is a factor of $2x^3 - 3x^2 - 17x + 30$ find the other two factors.

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ANSWERS

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

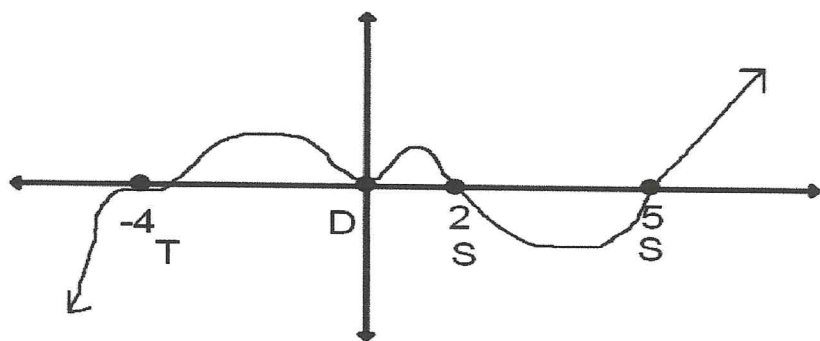
2. Name by degree Name by # of terms

a) Linear	Binomial
b) Cubic	Binomial
c) Constant	Monomial
d) Quadratic	Trinomial

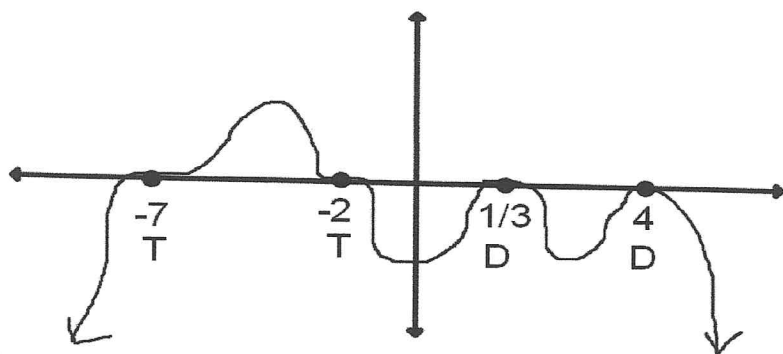
3. a) Degree = 5 Leading Coefficient = -7
End Behavior ($\nwarrow$, $\searrow$)

b) Degree = 8 Leading Coefficient = 640
End Behavior ($\nwarrow$, $\nearrow$)

4. a)



4. b)



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

6. a) $5x(x-2)(x+2)(x^2+5)$ b) $(3x-1)(3x+1)(x^2+7)$

c) $(x-5)(x+5)(x^2+3)$ d) $4x(x^2+6)(x^2-2)$ e) $(3x-2)(5x^2+3)$

f) $(x+4)(-4x+x^2+16)$ g) $(3x-5)(15x+9x^2+25)$

7. a) $\pm i\sqrt{2}, \pm 5$ b) $\pm 2i, 0, \pm \sqrt{3}$ c) $\frac{1}{3}, \pm 4$

d) $0, \pm 2, \pm i\sqrt{7}$ e) $\frac{2}{3}, \frac{-1 \pm i\sqrt{3}}{3}$

8. a) $m^5 - 5m^4n + 10m^3n^2 - 10m^2n^3 + 5mn^4 - n^5$

b) $x^4 - 12x^3 + 54x^2 - 108x + 81$

c) $16a^4 + 96a^3b + 216a^2b^2 + 216ab^3 + 81b^4$

9. a) $4x^2 - 21x + 65$ $R = -205$

b) $2x^2 - x + 7$ $R = -8$ c) $x^2 + 3x - 2$

10. No, the remainder is -3 not zero (Evaluate the dividend with 4 and the result is -3)

11. $R = 79$ (evaluate the dividend using 2)

12. Divide by $x+3$ and factor the result: The other factors are: $2x-5$ and $x-2$