Advanced Algebra | Final Exam Review | Name:
Spring 2008 | Chapter 7

Show all work on a separate sheet of paper.

1. Determine whether each expression is a polynomial. If so, classify the polynomial by degree and by number of terms.

a) $3x^2+2x+1$

b) $\frac{6}{x^2}+\frac{2}{x}-3$

c) $\frac{1}{2}x^4-3x^2+5$

2. Evaluate each polynomial expression for the indicated value of x.

a) $x^2-3x+6$ for x=2

b) $x^3-3x^2+4x+7$ for x = -3

3. Write each sum or difference in standard form.

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

b) $(4x^2+2x+1)-(6x^2+10x-7)$

c) $(3x-5)-(2x^2+5x+2)$

4. Graph each function and approximate any local maxima or minima to the nearest tenth. Find the intervals over which the function is increasing or decreasing.

a) $y=-3x^2+9x-1$

b) $y=-x^3+5x^2-2x+1$

c) $y=2x^3+3x^2-4x+1$

5. Divide by using long division or synthetic division.

a) $(3x-7x^2+10)\div(x-3)$

b) $(4x^3-2x^2+2x+3)\div(-x-2)$

c) $(-6x^4+2x^3-6x+1)\div(x^2+3x-1)$

d) $(x^3-4)\div(x+2)$

6. Use factoring to solve each equation.

a) $x^3-3x^2-28x=0$

b) $x^3-2x^2-15x=0$

7. Use a graph, synthetic division, and factoring to find all of the roots of each equation.

a) $x^3-7x^2+14x-8=0$

b) $x^3+2x^2-5x-6=0$

8. Use variable substitution and factoring to find all the roots of each equation.

a) $x^4-13x^2+36=0$

b) $x^4-21x^2+80=0$

9. Find all rational roots of each polynomial equation.

a) $6x^3+x^2-4x+1=0$

b) $9x^3+15x^2-32x+12=0$

c) $25x^3+95x^2+64x+12=0$

10. Find all zeros of each polynomial.

a) $P(x)=x^4-9x^2+20$

b) $P(x)=2x^3+5x^2-17x+7$

b) $P(x)=6x^3-10x^2-13x-3$

11. Write a polynomial function, P, in factored form by using the given information.

a) P is of degree 3; zeros: $\frac{1}{2},\pm 4i; P(0)=4$

b) P is of degree 4; zeros: $2_D,-1,1; P(0)=6$

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