

## Homework v2

### week 1 (6/09/08—6/13/08)

- Cartesian Coordinates**
1. working with rational expressions 1.4: 7,11-15, 21,25,27,31,35-39,43,45,51-57
  2. equations as sets of points 1.8: 47,49,55,63,71-93
  3. identifying the isosceles triangle 1.8: 31

- Review of Basic Functions**
1. converting instructions in English to functions 2.1: 1-7
  2. combining functions 2.1: 15-19, 25-28
  3. independent and dependent variables: 2.2: 61-71 (ignore the parts questions asking about range and domain).
  4. graph the functions by making a table 2.2: 11,13,17,23,25,31-35 (ignore the parts of the question asking about range and domain).
  5. setting up functions 2.6: 5-13,17,21,23,27,29 (special rel)
  6. combining functions: 2.7: 19-27,31-37,41,45,47 (ignore the parts of the question asking about range and domain)
  7. setting up functions: 2.7: 57-61,62

- Logs and Exponentials**
1. exponential functions: 4.1: 1,3
  2. equations with logs and exponentials, graphs of logs and exponentials: 4.2: 1,5,7,11,17,19,23,27,29,37,39
  3. manipulation of logs: 4.3: 3-9,21,27,33,41-45,51
  4. exponential equations 4.4: 5,17,23
  5. log equations 4.4: 41,47,49

### week 2 (6/16/08—6/20/08)

- Applications Of Logarithmic and Exponential Functions**
1. applications of the exponential function: 4.1: 65,67(a)(b)
  2. application of logs: 4.4 67,71,75,77
  3. more applications of Logs and Exponentials 4.5: 3,5,9,11,15-27

- Quadratic Functions**
1. quadratic functions: 2.5: 9,13,17,19,23,33,35,39,41,49
  2. applications of quadratic functions: 2.5: 59-65 applications

- Polynomials and the Fundamental Theorem of Algebra**
1. graphs of polynomials: 3.1: 1-5,9,13,17,20,21
  2. polynomials involving other functions, sketching graphs and factoring: 3.1: 25-31,35
  3. local maxima and minima of polynomials 3.1: 49,59
  4. polynomial division 3.2: 1-9,13,17,25,27,33,37,39,47
  5. factoring of monomials: 3.2: 51-65
  6. rational and real zeros of polynomials 3.3:11-15,27-31,41,43,47,51-55
  7. complex numbers 3.4: 11,13,17,21-25,31-35,39,41,45,47,51,53
  8. polynomials with complex roots: 3.4: 57,61,65 find roots (complex numbers)
  9. multiplicity, degree and The Fundamental Theorem of Algebra 3.5: 7,9,13,19,21,33-45,49,59,61

- Extra Credit**
1. roots of unity and polynomials of odd degree: 3.5: 69, 70
  2. cubic formula (as opposed to the quadratic formula): 3.3: 101,102
  3. prove Descartes rules of signs

### week 3 (6/23/08—6/27/08)

**More on Polynomials** 1. polar coordinates for complex numbers: 8.3: 11,13,25,27,37,42 ; 49,51,53,55  
(for the ones  $\geq 49$  rewrite in  $re^{i\theta}$  form, then do the multiplication. Make sure you convert degrees to radians).

2. asymptotes, intercepts and transformations of rational functions: 3.6: 1,3,7,9,17-23, 27,29,33,39,49,51,57-61

3. polynomials and logs in the same equation: 4.4: 27,29,31,33

4. parametric functions 10.7: 3-9,23,25

**Domain and Range, Sets, and the Set Theoretical Definition of a Function** 1. regions in the plane from sets: 1.8: 17,21-25,29 inequalities for regions in the plane

2. the domain of functions 2.1: 41-51,55

3. Find the domain of the function: 2.7: 7-11

4. domain, range and asymptotes for logs: 4.1: 5-25,29-41

5. revisiting independent and dependent variables: 2.2: 61-71 (when a function does have an inverse find it's domain).

6. piecewise functions 2.1: 21-23

7. graph the following piecewise functions 2.2: 39-45,53

8. one-to-oneness, verify inverses: 2.8: 9,11,17,27,29 one-to-one, verify inverses

9. finding and sketching inverses: 2.8: 37-47,51,53, finding and sketching inverses

10. setting up function inverses: 2.8 71,75

11. domain, range, and asymptotes for logs and exponentials: 4.2: 49,55,59-63

#### week 4 (6/30/08—7/03/08)

**Symmetry and Asymptotes** transformations of functions: 2.4: 3-9, 13-19, 41,42,44,47,53

test for Symmetry of functions : 2.4 55,61-67

asymptotes for logs and exponentials: 4.2: 49,55,59-63 (just identify the asymptotes)

**The Difference Quotient** 1. finding the difference quotient: 2.1: 29-35

2. difference quotient 1.4: 61,63,67,69,75,77,93 (simplify and identify the function you are taking the difference quotient of)

3. difference quotient for the exponential function 4.1: 43

4. average rates of change, max's and mins: 2.3: 13,15,19-27, 31-39

#### week 5 (7/07/08—7/11/08)

**Systems of Equations** 1. nonlinear systems of equations: 9.1: 3,11,19,21,25,27,31,41

2. applications of nonlinear systems of equations: 9.1: 47,49

3. linear equations: 9.2: 13,21,23

4. applications of linear equations 9.2 45-57

5. linear equations in three variables: 9.3: 5,7,11-17,21-25

6. applications of linear equations in three variables: 9.3 36,35

#### week 6 (7/14/08—7/18/08)

**Matrices** 1. systems of equations as matrices, gaussian elimination: 9.4: 7,9,15,19,23-27,39

2. matrix equations: 9.5:11-15 matrix equations

3. matrix operations: 9.5 :21-27,31,35 matrix operations

4. matrix equations applications: 39-45,47,49 (stochastic random walks)

5. 2by2 inverses: 9.6: 1,5-11, 2by2 inverses

6. higher order inverses: 19,25,27,37, higher order inverses

7. application of matrix inverses: 47(a)(b) application

#### week 7 (7/21/08—7/25/08)

- Conics**
1. Parabolas: 10.1:1-5,11-15,25,29,35,39,49
  2. Ellipses: 10.2:1,3,7,9,19-23,29,31,35,47,49,51
  3. Hyperbolas: 10.3:1,3,7,11,13,19,21,31-35

**week 8 (7/28/08—7/30/08)**