MAC 1140 SUMMER 2017

Review

R.5 Factoring Polynomials:
Completing the Square: p.57 #73-77 odd

Chapter 1: Equations and Inequalities

1.3 Complex Numbers; Quadratic Equations in the Complex Number System:
Are You Prepared: p.111 #1-3
Concepts and Vocabulary: p.111 #4-10
Add, subtract, multiply, and divide complex numbers: p.111-112 #11-53 odd, 83, 85
Solve quadratic equations in the complex number system: p.112 #55-73 odd
Determine the character of solutions of a quadratic equation: p.112 #75-81 odd
Solve applications involving operations on complex numbers: p.112 #87

Ch. 3: Functions and Their Graphs

3.4: Library of Functions; Piecewise-defined Functions
Are You Prepared: p.244 #1-3
Concepts and Vocabulary: p.244 #5, 10
Graph, write, or evaluate piecewise-defined functions: p.244-245 #27-45 odd
Graph, write, or evaluate greatest integer functions: p. 245 #41, 47, 61

Chapter 4: Linear and Quadratic Functions

4.3 Quadratic Functions and Their Properties:
Are You Prepared: p.299 #1-4
Concepts and Vocabulary: p.299 #5-12
Graph a quadratic function using transformations: p.299 #13-31 odd
Graph a quadratic function using its vertex, axis of symmetry, and intercepts: p.299-300 #33-47 odd, 81
Find a quadratic function given its vertex and one other point: p.300 #49-53 odd, 71
Find the maximum or minimum value of a quadratic function: p.300 #55-61 odd
Graph and analyze quadratic functions: p.300 #63-69 odd, 73-79 odd
Solve applications involving quadratic functions: p.301 #85–87 odd

Chapter 5: Polynomial and Rational Functions

5.1 Polynomial Functions and Models:
Are You Prepared: p.338 #1-3, 5-6
Concepts and Vocabulary: p.338 #7-16
Identify polynomial functions and their degree: p.338 #17-27 odd
Graph polynomial functions of degree 4 or 5 using transformations: p.338 #29-41 odd
Use given zeros to write and analyze polynomial functions: p.339-340 #43-55 odd, 115,
Identify the real zeros of a polynomial function and their multiplicity: p.339 #57-67 odd
Given a graph, identify a polynomial function and construct the polynomial: p.339-340 #69-79 odd
Analyze polynomials and create graphs either by hand or by graphing utility: p.339-340 #81-97 odd, 107-113 odd, 119

5.2 Properties of Rational Functions:
Are You Prepared: p.350 #1-3
Concepts and Vocabulary: p.350 #5-14
Find the domain of rational functions: p.351 #15-25 odd
Given the graph of a rational function, find the domain, range, asymptotes and intercepts: p.351 #27-31 odd
Graph rational functions using transformations: p.351 #33-43 odd, 61
Find all asymptotes of a given rational function: p.352 #45-55 odd

5.3 The Graph of a Rational Function:
Are You Prepared: p.365 #1
Concepts and Vocabulary: p.365 #2-6
Analyze the graph of a rational function: p.365-366 #7-53 odd

5.4 Polynomial and Rational Inequalities:
Are You Prepared: p.372 #1, 2
Concepts and Vocabulary: p.372 #3, 4
Solve polynomial inequalities graphically: p.372-374 #5-13 odd, 71, 73
Solve polynomial inequalities algebraically: p.373-374 #19-31 odd, 49, 51, 55, 59, 67
Solve rational inequalities graphically: p.372-373 #7, 15, 17, 61, 63
Solve rational inequalities algebraically: p.373-374 #33-47 odd, 53, 57, 69

5.5 The Real Zeros of a Polynomial Function:
Are You Prepared: p.386 #1, 2, 4
Concepts and Vocabulary: p.386 #5-6, 8-10
Use the Remainder and Factor Theorems: p.387 #11-19 odd, p.389 #107, 109, 113, 115
Use the Rational Zeros Theorem to list the potential rational zeros of a polynomial function: p.387 #33-43 odd
Find the real zeros of a polynomial function: p.387-389 #45-67 odd
Graph polynomial functions: p.388 #93-103 odd
Use the Intermediate Value Theorem: p.388 #Instructor created problems

5.6 Complex Zeros; Fundamental Theorem of Algebra:
Are You Prepared: p.394 #1, 2
Concepts and Vocabulary: p.394 #3-6
Use the Conjugate Pairs Theorem: p.394 #7-15 odd, 23-29 odd
Find a polynomial function with specified zeros: p.394 #17-21 odd
Find the complex zeros of a polynomial function: p.395 #31-39 odd
Chapter 6: Exponential and Logarithmic Functions

6.2 One-to-One Functions; Inverse Functions:
Are You Prepared: p.419 #1-3
Concepts and Vocabulary: p.419 #5-12
Determine whether a function is one-to-one: p.419-420 #13-25 odd
Determine the inverse of a function defined by a map or a set of ordered pairs: p.420 #27-33 odd
Obtain the graph of the inverse function from the graph of the function: p.421 #45-49 odd
Find the inverse of a function defined by an equation: p.420-422 #35-43 odd, 51-73 odd, 85, 89
Determine properties of the inverse of a function: p.421-422 #75-83 odd, 87

6.3 Exponential Functions:
Are You Prepared: p.434 #1-3
Concepts and Vocabulary: p.434 #6-14
Evaluate exponential expressions: p.434 #15-25 odd, p.438 #121,
Identify linear and exponential functions and find their equations: p.435 #27-33 odd
Graph exponential functions: p.435 #35-43 odd, 44, 45-61 odd, 101, 103
Solve exponential equations: p.436 #63-87 odd, 95-99 odd
Find the equations of exponential functions: p.436 #89-93 odd

6.4 Logarithmic Functions:
Concepts and Vocabulary: p.448 #4-10
Change exponential statements to logarithmic statements and vice versa: p.448 #11-25 odd
Evaluate logarithmic expressions: p.449 #27-37 odd, 51-57 odd
Determine the domains of logarithmic functions: p.449 #39-49 odd
Graph logarithmic functions: p.449-450 #61-87 odd, 115, 117
Solve logarithmic equations: p.449-450 #59, 89-113 odd

6.5 Properties of Logarithms:
Concepts and Vocabulary: p.459 #1-12
Work with the properties of logarithms: p.459-460 #13-35 odd, 85
Write logarithmic expressions as a sum or difference of logarithms: p.459 #37-55 odd
Write logarithmic expressions as a single logarithm: p.459 #57-69 odd
Evaluate logarithms whose base is neither 10 nor e: p.460 #71-77 odd
Express logarithmic equations as functions of x: p.460 #87-95 odd

6.6 Logarithmic and Exponential Equations:
Are You Prepared: p.465 #1, 2
Solve logarithmic equations: p.465-466 #5-39 odd, 83, 85, 93, 95
Solve exponential equations: p.465-466 #41-67 odd, 87-91 odd, 97-103 odd
6.7 Financial Models:
Are You Prepared: p.474 #1, 2
Concepts and Vocabulary: p.474 #3-6
Determine the future value of a lump sum of money: p.474-475 #7-13 odd, 27, 29
Determine the present value of a lump sum of money: p.475 #15-21 odd
Calculate effective rates of interest: p.475 #23, 25, 37
Determine the rate of interest or time required to double or triple lump sums of money: p.475-476 #31-35 odd, 67
Solve applications involving financial models: p.475-477 #39-55 odd

6.8 Exponential Growth and Decay Models; Newton's Law; Logistic Growth and Decay Models:
Find equations of populations that obey the law of uninhibited growth: p.486-487 #1, 5, 7, 29
Find equations of populations that obey the law of decay: p.486-487 #3, 9, 11, 17-21 odd

Chapter 11: Analytic Geometry

11.2 The Parabola:
Are You Prepared: p.786 #1-3, 5
Concepts and Vocabulary: p.786 #6-12
Write the equation of a parabola given a graph: p.786-787 #13-19 odd, 57-63 odd
Write the equation of a parabola from given information: p.787 #21-37 odd
Find the vertex, focus, and directrix of a parabola: p.787 #39-55 odd
Solve applications involving parabolas: p.787-788 #65-75 odd

11.3 The Ellipse:
Are You Prepared: p.796 #1-6
Concepts and Vocabulary: p.796 #7-12
Write an equation for an ellipse given its graph: p.796-797 #13, 15, 39, 41
Analyze and graph an ellipse given its equation: p.797-798 #17-25 odd, 43-53 odd, 65, 67
Write and graph an equation for an ellipse from given information: p.797 #27-37 odd, 55-63 odd
Solve applications involving ellipses: p.797-798 #69-73 odd, 79-81 odd

11.4 The Hyperbola:
Are You Prepared: p.809 #1-3, 5-6
Concepts and Vocabulary: p.809 #7-14
Write the equation for a hyperbola, given its graph: p.809-810 #15, 17, 37, 39
Find and graph the equation for a hyperbola from given information: p.809-810 #19-27 odd
Analyze and graph a hyperbola: p.810-811 #29-35 odd, 41-65 odd, 83
Chapter 12: Systems of Equations and Inequalities

12.1 Systems of Linear Equations: Substitution and Elimination:
Are You Prepared: p.854 #1,2
Concepts and Vocabulary: p.854 #3-8
Determine if given ordered pairs or ordered triples are solutions to systems of equations: p.855 #9-17 odd, 18
Solve systems of two equations by substitution or elimination; identify inconsistent systems: p.855 #19-41 odd
Solve systems of three equations containing three variables; identify inconsistent systems: p.855-856 #43-55 odd
Find a, b, and c in functions of form $y=ax^2+bx+c$ using three points and systems of equations: p.857 #73

12.2 Systems of Linear Equations: Matrices:
Concepts and Vocabulary: p.870 #1-6
Write augmented matrices of systems of linear equations: p.870 #7-17 odd
Write systems of equations from augmented matrices and perform row operations on matrices: p.870-871 #19-25 odd
Use the reduced row echelon form of augmented matrices to determine solutions to systems: p.871 #27-37 odd
Solve linear systems of equations using matrices: p.871-872 #39-73 odd
Use matrices and coordinates to determine quadratic and cubic functions: p.872 #75, 77

12.3 Systems of Linear Equations: Determinants:
Concepts and Vocabulary: p.881 #1-6
Evaluate 2 by 2 determinants: p.882 #7, 9
Evaluate 3 by 3 determinants: p.882 #11, 13
Use Cramer's Rule to solve a system of two equations containing two variables: p.882 #17-23 odd
Use Cramer's Rule to solve a system of three equations containing three variables: p.882-883 #33-37 odd
Use properties of determinants to find values of determinants or to solve for variables: p.882-883 #51-55 odd

12.4 Matrix Algebra:
Concepts and Vocabulary: p.897 #1-8
Use operations with matrices to evaluate expressions: p.898 #9-23 odd
Find products of matrices: p.898 #25-29 odd
Find inverses of matrices or show that some matrices have no inverses: p.898 #31-39 odd, 61-65 odd, VQ-3
Solve systems of linear equations using inverse matrices: p.898 #41-59 odd
Chapter 13: Sequences; Induction; the Binomial Theorem

13.1 Sequences:
Are You Prepared: p.946 #1, 2
Concepts and Vocabulary: p.947 #3-8
Evaluate factorial expressions: p.947 #9-13 odd
Write terms of a sequence: p.947 #15-25 odd
Write the nth term of a sequence: p.947 #27-33 odd
Write terms of a sequence defined recursively: p.947 #35-47 odd
Use summation notation: p.947 #49-67 odd
Find the sum of a sequence: p.948 #69-79 odd

13.2 Arithmetic Sequences:
Concepts and Vocabulary: p.954 #1-6
Determine whether a sequence is arithmetic: p.954 #7-15 odd
Find a formula for the nth term of an arithmetic sequence: p.954-955 #17-37 odd
Find the sum of an arithmetic sequence: p.954 #39-55 odd, 59

13.3 Geometric Sequences; Geometric Series:
Concepts and Vocabulary: p.964 #3-8
Determine whether a sequence is geometric: p.964-965 #9-17 odd
Find a formula for the nth term of a geometric sequence: p.964 #19-39 odd
Find the sum of a geometric sequence: p.964 #41-45 odd
Determine whether a geometric series converges or diverges: p.965 #53-81 odd

13.4 Mathematical Induction:
Use mathematical induction to prove statements: p.970 #1-17 odd

13.5 The Binomial Theorem:
Concepts and Vocabulary: p.976 #1-4
Evaluate expressions involving n items taken j at a time: p.976 #5-11 odd, 49
Use the Binomial Theorem to expand expressions: p.976-977 #17-41 odd