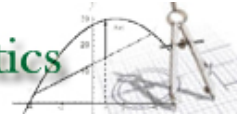MAC1105 College Algebra
Final Examination Topic Outline

1. Solving linear, rational, polynomial, and radical equations
2. Simplify expressions involving complex numbers
3. Solving quadratic equations by factoring, completing the square, square root property, and quadratic formula
4. Using the discriminant to determine the types of solutions of a given quadratic equation
5. Solving formula for specified variable
6. Solving linear, compound, and absolute value equations
7. Solve applications relating to any of the above types of equations

8. Identify relations & functions
9. Determine domain & range of a given functions
10. Find the slope given two points, a line parallel or perpendicular
11. Find the average rate of change given a functions and two points
12. Find and simplify the difference quotient for a given function
13. Find the equation of a line given two points, a point & a slope, a point and a line parallel or perpendicular to the requested line
14. Write linear equations as linear functions
15. Identify the base function and any/all transformations done from a given transformed function
16. Construct a transformed function given a base function and requested transformations
17. Sketch a transformed graph given a sketch by applying given transformations
18. Sketch a piece-wise defined function
19. Determine if a function is even, odd, or neither
20. Determine if a function is symmetric to the x-axis, y-axis, or origin
21. Apply and simplify Algebraic Function operations
22. Find the domain of functions including modifications from simplifying algebraic operations
23. Find the composition of algebraic
24. Find the domain of a composed function
25. Find the decomposition of algebraic functions
26. Find the Cost, Revenue, and Profit functions using provided information to construct requested functions
27. Solve applications relating to any of the above

28. Graph quadratic functions
29. Find the vertex, axis of symmetry of a given quadratic function
30. Find the maximum/minimum point and value of a quadratic function
31. Use a graphing utility to find the local max/min of a function
32. Determine where a function is increasing or decreasing
33. Determine the end behavior of a polynomial based on its' leading term
34. Use the Intermediate Value Theorem to determine the existence of a zero
35. Carry out Polynomial Division; be able to write the resulting output $P(x) = d(x)Q(x) + R(x)$
36. Utilize the Remainder & Factor Theorems to determine the remainder resulting from synthetic division or if a given value is a factor from carrying out synthetic division
37. Use the Rational Zeros Theorem to find all possible rational zeros for a given polynomial
38. Use Descarte's Rule of Signs to determine the number of possible positive & negative zeros

39. Determine the zeros and their multiplicity for a given polynomial
40. Sketch a comprehensive graph for a given polynomial
41. Determine the domain of a Rational function
42. Determine critical numbers & all asymptotes of a given rational function
43. Sketch the graph of a rational function indicating any asymptotes on the graph
44. Solve Polynomial & Rational Inequalities
45. Solve related applications

46. Determine if a function is one to one
47. Find the inverse of a given function
48. Convert from exponential to logarithmic/logarithmic to exponential form
49. Utilize change of base to evaluate an expression
50. Utilize Logarithmic properties to expand/contract expressions
51. Solve logarithmic & exponential equations (exact & approximate solutions)
52. Find the doubling time or half-life for a given situation
53. Sketch the graph of a given exponential or logarithmic function
54. Solve related applications

55. Solve systems of equations (two or three variables) by any method discussed in class
56. Find a quadratic or cubic function given points the function passes through
57. Solve related applications

Chapter Review questions

p. 160   ch. 1   1 – 98, *eoo

p. 278   ch. 2   19 – 121, *eoo

p. 394   ch. 3   1 – 6, 8 – 37, 40 – 77, *eeo

p. 485   ch. 4   5 – 90, *eoo

p. 558   ch. 5   1 – 21

Chapter Test questions

p. 163 ch. 1   1 – 43 odd

p. 282 ch. 2   4 – 29 odd

p. 397 ch. 3   1 – 8, 10 – 32

p. 487 ch. 4   4 – 41, odd

p. 560 ch. 5   1 – 18, 20 – 21

And study your Take Home Tests & on-line quizzes (and at least study the assigned Portfolio questions from the chapter reviews)