

Topics for the Midyear Exam

1. Lines and Points
 - (a) write an equation of a line
 - (b) midpoint of segment
 - (c) slope given points, equation of line, a parallel line, a perpendicular line
 - (d) angle of inclination
 - (e) distance between points
2. Algebra
 - (a) solve quadratic equations using the quadratic formula and by factoring
 - (b) solve equations with rational expressions (fractions).
 - (c) relationship between the multiplicity of a zero of a poly. and its graph
 - (d) graphical solutions to equations
 - (e) writing a function from a verbal description
 - (f) using the calculator to determine maximums and minimums of functions
3. Matrices
 - (a) Equality
 - (b) Addition
 - (c) Scaler Multiplication: scaler and matrix
 - (d) Determinant of a square matrix
 - (e) Transpose of a matrix
 - (f) Inverse of a 2 by 2 matrix – without a calculator
 - (g) Inverse of a square matrix – using a calculator
 - (h) Communication matrices
 - (i) Transition matrices and Markov chains
 - (j) Matrix solution to a linear system
4. Statistics
 - (a) distinction between a sample and a population
 - (b) measures of central tendency – mean, median, mode
 - (c) measures of variability – range, standard deviation
 - (d) normal curve
 1. finding areas – normalcdf(Low, High, Mean, St. D.)
 2. finding scores associated with areas – InvNorm(% , Mean, St. D.)
 3. confidence intervals for proportions
5. Trigonometry
 - (a) definitions of functions
 - (b) signs in the 4 quadrants
 - (c) convert from radians to degrees
 - (d) convert from degrees to radians
 - (e) using $S = r\theta$ to solve problems involving arc length
 - (f) solve equations – with a calculator
 - (h) memorize function values of common angles in deg. and in radians
 - (i) write a sinusoidal from given data – use the sinusoidal to answer questions
6. Calculus
 - (a) AROC – Average Rate of Change
 - (b) IROC – Instantaneous Rate of Change(derivative)
 - (c) Compute a limit from: graph, formula both with and without a calculator
 - (d) Continuity of a function at a point
 - (e) Equation of a line tangent to a curve at a given point