

# MATH 141 Concepts to know for Final Exam

- Cost, Revenue, and Profit Equations; Break even Values; supply and demand functions; equilibrium point.
- Least squares regression (Linear regression)
- Solving systems of equations ( Substitution method, Gauss-Jordan Method, rref, Different types of answers ( No solution, Exactly one solution, Infinite solutions - Written in parametric form, Placing restriction on the parameter), Row reduced form).
- Matrix Operations ( Addition, Subtraction, Multiplication, Equality, Scalar multiplication, Transpose, Inverses Matrices, Translating word problems to systems of equations).
- Setting up a Linear programming problem.
- Inequalities (Graphing, Shading for the feasible region)
- Solving Linear programming problems. ( Graphing method, feasible region, Corner points, How to find a solution. )
- Set notation ( $\subseteq, \subset, \in, U, \emptyset, A^c, \cup, \cap, n(A)$ )
- Subsets and Elements, Translating sets to English, Translating English to sets, Filling in a Venn Diagram, Shading Venn diagrams.
- Counting problems (using Venn Diagrams, Tables, Trees, Multiplication Principle, Combinations and Permutations, Permutations of non-distinct Objects, Counting what you want by counting what you do not want, Union rule.
- Sample space and Events, Outcomes, Mutually exclusive.
- Uniform sample space, Probability using Venn diagrams, Probability using tables, Probability using formulas.
- Conditional probability (Reduced sample space, Formula, Backwards tree)
- Independent Events ( Test for independence: Two events, A and B, are independent if  $P(A \cap B) = P(A)P(B)$ , using the concept of independence).
- Random variables ( Finite Discrete, Infinite Discrete, Continuous, Probability distribution)
- Histogram
- Mean, Median, Mode, Variance, Standard Deviation
- Expected Value

- Fair game
- Odds ( in favor of E, against E), Probability from Odds
- Binomial Distribution, mean, standard deviation, expected value ( n, p, q, r)
- Normal Distribution, The standard normal random variable.
- Calculator commands: binomialpdf, binomialcdf, normalcdf, invnorm, rref, linreg, 1varstats
- Simple interest
- Compound interest
- Annuities
- Amortization schedules
- Effective yield or effective rate of interest
- Any additional topic discussed in class