

Principles of Mathematics 12 (Final Study Sheet)

Please be sure to review all the material in the Mid-Term Study Sheet since it will also be on your exam!!

Trigonometry Part 1:

- ❖ The amplitude and period of all six basic trig graphs
- ❖ How to graph a reflection or vertical expansion or compression of a trig function
- ❖ How to graph a vertical displacement (translation up or down)
- ❖ How to graph a phase shift (translation right or left)
- ❖ How to graph a change in period (horizontal expansion or compression)
- ❖ How to apply my knowledge to solve applications, ex: Ferris wheel, tides..

Trigonometry Part 2:

- ❖ **Background:** how to simplify complex fractions
- ❖ **Background:** how to factor
- ❖ How to use identities to simplify expressions
- ❖ How to prove Identities – all the possible strategies – *practice, practice, practice!!!*
- ❖ How to solve trig equations in radians or degrees for a limited domain
- ❖ How to solve trig equations in radians or degrees using a general solution
- ❖ How to solve trig equations in radians or degrees showing exact solutions

Combinatorics Unit:

- ❖ The Fundamental Counting Principle
- ❖ Permutations
- ❖ Combinations
- ❖ Arrangements of objects when some are alike
- ❖ Factorial notation
- ❖ How to simplify and solve Factorial Notation equations
- ❖ How to solve pathway problems
- ❖ Pascal's Triangle
- ❖ How to expand binomials using the Binomial Theorem

Probability Unit:

- ❖ Meaning of words such as:
 - Tree diagram
 - Sample space
 - Outcome
 - Elements
 - Event
 - Experimental vs Theoretical probability
 - Equally likely events
 - Dependent or Independent events
 - Mutually exclusive events
 - Complement
- ❖ How to find basic probabilities by listing all possible outcomes or using charts
- ❖ How to find probabilities using combinatorics
- ❖ How to draw and use Venn Diagrams and how to use the formula:
$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$
- ❖ How to find probabilities using Tree Diagrams
- ❖ How to solve the Birthday Problem
- ❖ How and when to use the Conditional Probability formula: $P(A / B)$
- ❖ What is a Binomial Distribution and how to find the probabilities of any event