

Calculus AB Box Project

Materials Needed

- 1 Tissue Box (Size does not matter)
- White paper, construction paper

Instructions

You will be decorating 4 sides of the tissue box with calculus related information. You will write the information on white paper and glue it to the tissue box.

Side 1

Select a Calculus-related occupation, ideally one you would potentially be interested in, that would require you to have taken calculus. Here is a list with suggestions:

<http://www.xpmath.com/careers/topicsresult.php?subjectID=5&topicID=1>

Include the following on that side:

- Describe the occupation by giving a job description.
- Up to what level of mathematics would you have to learn for this occupation?
- How is mathematics used in this occupation?
- Include a visual relating to this job.

Side 2

Success in Calculus is dependent on familiarity with concepts from previous math classes. Pick a topic of prerequisite knowledge that was needed for success in calculus.

Include the following on that side:

- The math class you first learned the concept in.
- An example problem from when you first learned the topic with the solution.
- An example problem from Calculus that requires knowledge of the topic along with the solution.

Sample Prerequisite Knowledge

- Factoring Polynomials
- Solving Equations
- Composition Functions
- Exponential Functions
- Linear Functions
- Quadratic Functions
- Trigonometric Functions
- Inverse Functions
- Parent Functions and Transformations
- The Unit Circle
- Simplifying Expressions
- Absolute Value Functions

Sides 3 & 4

Select 2 calculus topics from the list below. One topic should be something that was easy for you this year. One topic should be one that was challenging for you this year.

Each side must have 3 bullet points, an example with the solution and a visual (like a graph) if applicable or an additional example with the solution.

Sample Topics

- Rationalization to calculate limits
- Definition of continuity
- Types of discontinuity
- Average rate of change vs. Instantaneous Rate of Change
- Definition of Derivative
- Differentiability
- Product Rule & Quotient Rule
- Implicit Differentiation
- Derivatives of Inverse Functions
- Finding Extremas and Points of Inflection
- Mean Value Theorem and Intermediate Value Theorem
- 1st Fundamental Theorem of Calculus
- 2nd Fundamental Theorem of Calculus
- Linear Approximation
- Particle Motion
- Optimization
- Related Rates
- L'Hopitals Rule
- Area between two curves
- Riemann Sums
- U-substitution
- Disk and Washer Method
- Shell Method
- Average Value Theorem
- Separable Differential Equations
- Slope Fields

****The box project is worth 50 points.**

Timeline

Thursday, May 16 & Friday, May 17-Work on Box Project in class

Monday, May 20 & Tuesday, May 21- Box Project due at the END of class.