

Spanish Fork High School

2014/2015 AP AB Calculus "I can" Statements

**Chapter 1: I can calculate limits using algebra, or from graphs, or from tables of data**

- I can calculate limits involving infinity.
- I can calculate limits using L'Hopital's rule.
- I can calculate average and instantaneous rates of change.
- I can determine if a function is continuous.
- I can find the equation of a tangent or normal line to a curve given a point.

**Chapter 2: I can find a derivative presented graphically, numerically, and analytically.**

- I can calculate a derivative using the definition.
- I can calculate the derivative of a constant.
- I can calculate a derivative using the sum/difference rules.
- I can calculate a derivative using the product/quotient rules.
- I can calculate a derivative using the power rule.
- I can calculate a derivative for the six trigonometric functions.
- I can find a derivative using the chain rule.
- I can use derivatives to analyze straight line motion.
- I can find derivatives using implicit differentiation.
- I find calculate derivative of functions involving the inverse trigonometric functions.
- I can calculate derivative of exponential and logarithmic functions.
- I can determine if a function is differentiable at a given point.

**Chapter 3: I can use derivatives to analyze a graph.**

- I can find local or global extreme values of a function.
- I can apply the Mean Value Theorem and find the intervals where a function is increasing or decreasing.
- I can use the first and second derivative tests to determine the local extreme values of a function.
- I can determine the concavity of a function and locate points of inflection.
- I can graph  $f$  using information about  $f'$ .
- I can solve application problems using maximums and minimums.
- I can find linearizations of a function and use the linearization the approximate zeroes of a functions.
- I can solve related rates problems.

**Chapter 4: I can evaluate an integral.**

- I can integrate by finding the area under a curve.
- I can integrate by using Riemann sums (LRAM, RRAM, MRAM and Trapezoid rule)

- I can integrate using the rules for definite integrals.
- I can find the average value of a function over a closed interval.
- I can apply the Fundamental Theorem of Calculus.

**Chapter 5: I can use the derivative to find a function.**

- I can construct a slope field.
- I can compute an integral using substitution.
- I can solve problems involving exponential growth or decay.

**Chapter 6: I can use integrals in application problems**

- I can solve a problem in which a rate is integrated to find the net change over time in a variety of applications.
- I can find the area between curves.
- I can find the volume of a solid created by rotating an enclosed region about a specified axis.
- I can find the volume of a solid given the area of its cross section.