

## MATHEMATICS - CALCULUS AB. ADVANCED PLACEMENT

**Subject:** Calculus AB. Advanced Placement

**Academic Standard:** C.4.3

**Academic Standard Indicator:** --

**Core Standard:** No

**Standard Description (Academic or Indicator):** Interpret a definite integral as a limit of Riemann Sums.

**Suggestion for Integrating International**

**Content:** Have students use the (Greek) Archimedes' Method of Exhaustion to find an estimate for pi. Then have students consider how this method is similar to finding limits of the (German) Riemann Sums.

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**Subject:** Calculus AB. Advanced Placement

**Academic Standard:** C.5

**Academic Standard Indicator:** C.5.3

**Core Standard:** No

**Standard Description (Academic or Indicator):** Solve differential equations of the form  $y' = ky$  as applied to growth and decay problems.

**Suggestion for Integrating International**

**Content:** Have students find census data from two countries of their choice dating back to, for example, 1920 and 1930. Then have them solve the exponential growth differential equation and use the data to solve for the constant of integration, as well as the growth rate. Students can then determine how predictive their model for the current population of the two countries is and comment on improvements they could make to their models.

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