**Calculus AB**

**Study Guide for the year’s last quest**

Net Change as the Integral of a Rate (5.5)



Hard to read words:

Original problem: “velocity”. Part a: “first”. Part c: “maximum”

Substitution Method (5.6)

Evaluate the integral:

Exponential growth and decay (5.8)

The C-14 to C-12 ratio of a sample is proportional to the disintegration rate (number of beta particles emitted per minute) that is measured directly with a Geiger counter. The disintegration rate of carbon in a living organism is 15.3 beta particles/min per gram. Find the age of a sample that emits 9.5 beta particles/min per gram. The decay constant for C-14 is k = -0.000121.

Area (6.1)

Find the combined area of the 2 regions bounded by x1 = y3 - 2y2 + y, and x2 = y2 – y.



Arc Length (8.1)

Calculate the arc length of y = ex/2 + e–x/2, over the interval [0, 2].

Separation of variables (9.1)

Solve the initial value problem: