Math 142 – Calculus 2 Name_____
Section 8.7 Video Worksheet

Simpson and Trapezoid Rule

Trapezoid Area

$\frac{1}{2}(y_1 + y_2)\Delta x$, where $\Delta x =$

Trapezoidal Rule

To approximate $\int_a^b f(x)dx$, use T =

If f'' is continuous and *M* is any upper bound for the values of $|f''|$ on $[a, b]$, then the error E_T in the trapezoidal approximation of the integral of f from a to b for n steps satisfies the inequality

$|E_T| \leq$

Simpson's Rule

To approximate $\int_a^b f(x)dx$, use S =

The y's are the values of f at the partition points

$X_0 =$

The number n is even, and $\Delta x =$

If $f^{(4)}$ is continuous and *M* is any upper bound for the values of $\left|f^{(4)}\right|$ on $[a, b]$, then the error E_S in the Simpson's Rule approximation of the integral of f from a to b for n steps satisfies the inequality

$|E_S| \leq$

Practice Problems

$\int_0^2 (5t^3 + 6t)dt$

Estimate the minimum number of subintervals to approximate the value of $\int_1^2 \frac{11}{s^2} ds$ with an error of magnitude less than 10^{-5} using

a) The error estimate formula for the Trapezoidal rule
b) The error estimate formula for the Simpson's Rule