Integral Approximations Name:_____

In this exploration you will use the Riemann Program to generate approximations to an integral for different values of n. Then by comparing the errors from these methods you will be able to draw some empirical conclusions about the relative accuracy of these methods.

Choose one of the functions below and approximate the integral $\int_1^5 f(x)\,dx$ for the given number of subdivisions. Round your results to two significant digits. Then calculate the value of the integral using the fnInt operation of the calculator and use it to determine the errors.

$$f(x) = \ln x, \quad f(x) = e^x, \quad f(x) = \sin x, \quad f(x) = x^3$$

	LHS	RHS	TRAP	MID
$n = 10$				
$n = 100$				

	LHS Error	RHS Error	TRAP Error	MID Error
$n = 10$				
$n = 100$				

1. Compare the errors for $n = 10$ (and then $n = 100$) for LHS and RHS; for TRAP and MID. By approximately what integer factor do the errors differ?

2. Compare the errors in each column. By approximately what integer factor do the errors differ for each method?