

Homework 7

Due April 13, 11:00am

50 points

CS 4499/5531

Scientific Computing

Dr. Leslie Kerby

1. **Create a function to numerically calculate an integral using the trapezoid method.** This `trap_int` (name it whatever you want) function should return a double and have arguments double `a`, double `b`, int `n`, and function `f`, where
 - a: start of range
 - b: end of range
 - n: number of sections
 - f: function to be numerically integrated.
2. **Create a function to numerically calculate an integral using Simpson's (or Kepler's) method.** This `simp_int` (name it whatever you want) function should return a double and have arguments double `a`, double `b`, int `n`, and function `f`, defined above.
3. Test your trapezoid and Simpson integration implementations on $f(x) = x^2 + 1$, from $x=[1,5]$.

Note: You could also create your trapezoid and Simpson implementations to accept a beginning and ending iterator to your quadrature points collection, instead of `a`, `b`, and `n`.

Attach your source code, screenshots of output, and header (if used) files. Include compiled executables if you wish.