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#### OpenMP Trapezoidal Integration

The parallel code submitted to compute the trapezoidal area under a curve was structured nearly identically to the serial code. The for loop contained within the serial code was converted into an OpenMP parallel for structure with a private (i.e., thread-local) iterator and an adding-reduction variable into which the integral was summed. A reduction variable in the context of OpenMP essentially expands the variable to thread-local copies of the variable which are then added together at the end of the parallelization. After the parallel section, the integral value is multiplied by the width of the trapezoids to get the approximate area under the curve.

**Table 1 – Timing analysis for lower bound of 32, upper bound of 96 with 100 million trapezoids for a varying number of threads. Performed on xunil-05.coe.drexel.edu**

Threads Used	2	4	8	16	32
Serial Time [s]	2.596202	2.595823	2.598064	2.700737	2.597127
MT Time [s]	1.361194	0.713749	0.416724	0.213859	0.160461
Speedup [s]	1.235008	1.882074	2.181340	2.486878	2.436666