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Maple Lab

B.

1&2) For the left and right sums, the error gets halved when the “n” is doubled for most cases. For the trapezoid and the middlesum, the error seems to go down by a power of four. The trapezoidal error tended to be twice as large as the middlesum errors. The left and right sums has similar errors for each n but since rightsum is an underestimate, the error was negative. The absolute value of the rightsums is very similar to the leftsum areas. The sign of the errors for the sums depended on the functions concavity. For example, if the graph was concave up, the errors for the Trap sum tended to be negative.

3) When the function is concave up, the midpoint is able to create two congruent triangles by the tangent line of the function.

C.

1&2) The Simpson Rule created very small and sometimes nonexistent error values especially as the n value increased. That is due to the combination of using midpoint sums and trapezoidal sums which were the most accurate values processed.