Problem 1

Illustrate the effect of round-off error in adding up numbers of differing magnitudes. Do not use a calculator or a computer, instead do everything here by hand. Assume that all arithmetical operations are rounded to 3 digits at each step. The result we want to compute is:

$$10.0 + 0.333 + 0.333 + 0.333$$

1. What is the result if you add from left to right?

2. What is the result if you add from right to left?

3. Compare relative error for the results obtained from parts 1 and 2.