Section 1.2 Worksheet: Round-off and Computer Arithmetic

1. Imagine that reals were represented in a computer by one-byte, with a sign bit, two characteristic bits, and five mantissa bits. Use the same normalization that our text uses for the long real, and determine

   (a) What would be the largest number (in magnitude) that one could represent?

   (b) What would be the smallest non-zero number (in magnitude) that one could represent?

   (c) How many distinct numbers could one represent?

   (d) How many distinct numbers would there be at each order of magnitude (base 2)?

2. In example 6 our author advises you to verify the results of Table 1.4 carefully. Do so!

3. Continue with example 6, and carefully verify the results obtained using nesting.