

## Assignment #1

**Due Wednesday 8 September, 2021 at the start of class.**

**Submit on paper or by email:**    `elbueler@alaska.edu`

**Exercise 1.1.1 in Section 1.1.**

**Exercise 1.1.3 in Section 1.1.**

**Exercise 1.1.4 in Section 1.1.**

**Exercise 1.2.1 in Section 1.2.**

**Exercise 1.2.5 in Section 1.2.**    *Hint. Recall  $f^{-1}(f(x)) = x$  by definition.*

**Exercise 1.2.7 in Section 1.2.**

**P1.**    The terms *overflow* and *underflow* are defined on page 12 of the textbook.

**(a)**    Describe a calculation on two valid double precision floating point numbers which causes overflow. Confirm this in MATLAB.

**(b)**    Describe a calculation on two nonzero valid double precision floating point numbers which causes underflow. Confirm this in MATLAB, showing that the result is really zero. (*The result would not be zero in exact arithmetic.*)

**(c)**    Confirm in MATLAB that  $10^{-310}$  does not underflow to zero but that  $10^{-330}$  does. What is going on? (*See the text, and the footnote, on page 12.*)