MATH 4334.001/CS 4334.001 Name : _____
Fall 2023
Paper Homework 3
Due 09/13/2023

<div align="center">Show ALL work to receive full credit.</div>

1. Determine the single-precision machine representation in a 32-bit word-length computer of the following decimal numbers:

   (a) 0.125

   (b) -9876.54321

2. Identify the floating-point numbers corresponding to the following bit strings:

   (a) | 0 11111111 00000000000000000000000 |

   (b) | 0 00000001 00000000000000000000000 |

3. How many normalized floating-point numbers are available in a binary machine if n bits are allocated to the mantissa and m bits are allocated to the exponent? Assume that two additonal bits are used for signs, as in a 32-bit length computer.

4. Show by an example that in computer arithmetic $a + (b + c)$ may differ from $(a + b) + c$.