

CS133 Assignment 1

Due date: Thursday 4/11/2019 at 11:59 PM

Floating point and linear algebra

- (1 points) Convert the following numbers from decimal to binary
217.75
-14.125
- (1 points) Convert the following numbers from binary to decimal
11011.0011
-0.0101
- (2 points) Following the IEEE 754 standard for floating point numbers, represent the following binary real number as a single-precision floating point number (32-bits)
11011.0011
- (6 points) Use the figure below to answer the following questions
 - Represent the vector $a = \overrightarrow{AB}$ in Cartesian representation
 - Compute the angle between \overrightarrow{AB} and the positive x-axis
 - Compute the angle between \overrightarrow{BD} and the positive x-axis
 - Compute the angle between \overrightarrow{AB} and \overrightarrow{BD}
 - Compute the cross product $\overrightarrow{AB} \times \overrightarrow{BD}$ in two different ways
 - Compute the dot product $\overrightarrow{AB} \cdot \overrightarrow{BD}$ in two different ways
 - Compute the coordinates of the intersection of the two line segments $B'D$ and $A'C$

