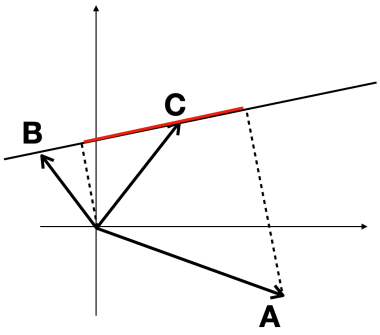
Homework 3

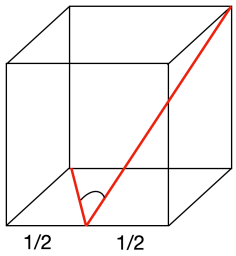
1. Find the the Euclidean length of the projection of vector **A** to the line that comes through the points **B** and **C** as shown in the graph.

   A = [1, -1, 2], B = [0, 1, 4], C = [3, 1, 0]



2. We have got a cube.

   Find the angle between two red lines as shown in the graph.



3. A plane is given by the equation: x + 2y + 3z = 4. Does it intersect the sphere with the radius r=1 and the center at [-3, 2, 2]?

4. Find the distance from the point [6, 7, 3] to the line that comes through [1, 0, 1] and [0, -1, 2].

5. **Optional**:

   Build an SVM model based on the vectors of the two classes given in the file svm-data.csv. Predict the class for the vectors below:

   A = [1, 0, 1.5], B = [-1, 2, -2], C = [0, 0.2, 0.7], D = [1, -2, 2.5]