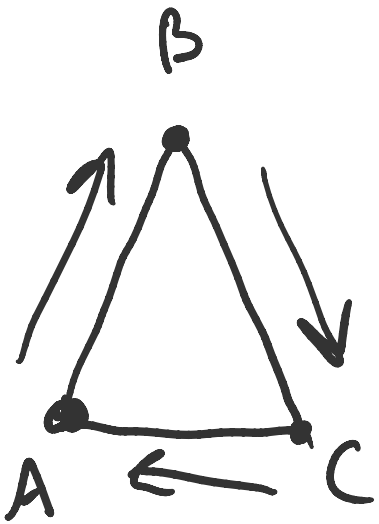
# Theory

Wednesday, December 6, 2017 7:37 PM

## Theory Questions:

1. Given a triangle in 3D space specified by vertices $A = [1, 1, 1]^T, B = [5, 1, 1]^T, C = [2, 3, -2]^T$ compute the normal of this polygon. Assume that the vertices are given in counter-clockwise order for rendering. Show your work. Make sure to normalize your final vector. (4pts)




vector U, V

$$U = \begin{bmatrix} 4 \\ 0 \\ 0 \end{bmatrix}$$

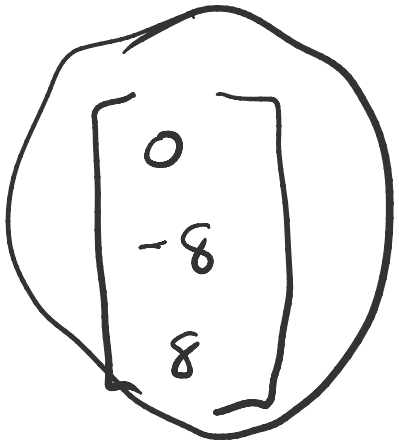
B - A

$$V = \begin{bmatrix} 1 \\ 2 \\ -3 \end{bmatrix}$$

C - A

Normal

$$\begin{bmatrix} (U[1] * V[2]) - (U[2] * V[1]) \\ (U[2] * V[0]) - (U[0] * V[2]) \\ (U[0] * V[1]) - (U[1] * V[0]) \end{bmatrix}$$




Since $N_z > 0$
the normal is
front facing