MATH 54 SUMMER 2017, QUIZ 19

\[ u = \begin{bmatrix} 3 \\ 2 \\ 1 \\ 2 \end{bmatrix} \quad v = \begin{bmatrix} 1 \\ 0 \\ -1 \\ 2 \end{bmatrix} \quad w = \begin{bmatrix} 5 \\ 1 \\ -1 \\ -8 \end{bmatrix} \]

(a) Find the length of \( u \).

(b) Find the distance between \( u \) and \( v \)—i.e. find \( \text{dist}(u, v) \).

(c) Find the cosine of the angle between \( u \) and \( v \).

(d) Find a unit vector in the same direction as \( u \).

(e) Is any pair of the three vectors above orthogonal to each other?

Date: July 20, 2017.