

Câu 1. Dùng thuật giải Gram-Schmidt trực chuẩn các vector sau

- a) $u_1 = (1,1,1), u_2 = (0,1,1), u_3 = (0,0,1)$
- b) $u_1 = (1,1,1), u_2 = (-1,1,0), u_3 = (1,2,1)$
- c) $u_1 = (1,0,0), u_2 = (3,7,-2), u_3 = (0,4,1)$
- d) $u_1 = (0,2,1,0), u_2 = (1,-1,0,0), u_3 = (1,2,0,-1), u_4 = (1,0,0,1)$

Câu 2. Phân rã QR các ma trận sau

a) $\begin{bmatrix} 1 & 1 & 2 \\ 2 & -1 & 1 \\ -2 & 4 & 1 \end{bmatrix}$

b) $\begin{bmatrix} 1 & 1 & 1 \\ 2 & -2 & 2 \\ 1 & 1 & -1 \end{bmatrix}$

c) $\begin{bmatrix} 1 & 1 & -1 \\ 0 & 1 & 2 \\ 1 & 1 & 1 \end{bmatrix}$

d) $\begin{bmatrix} -1 & -1 & 1 \\ 1 & 3 & 3 \\ -1 & -1 & 5 \\ 1 & 3 & 7 \end{bmatrix}$

e) $\begin{bmatrix} 1 & 1 & 1 \\ 2 & 2 & 0 \\ 3 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

f) $\begin{bmatrix} -2 & 1 & 3 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

g) $\begin{bmatrix} 1 & -1 & 2 \\ 1 & 0 & -1 \\ -1 & 1 & 2 \\ 0 & 1 & 1 \end{bmatrix}$