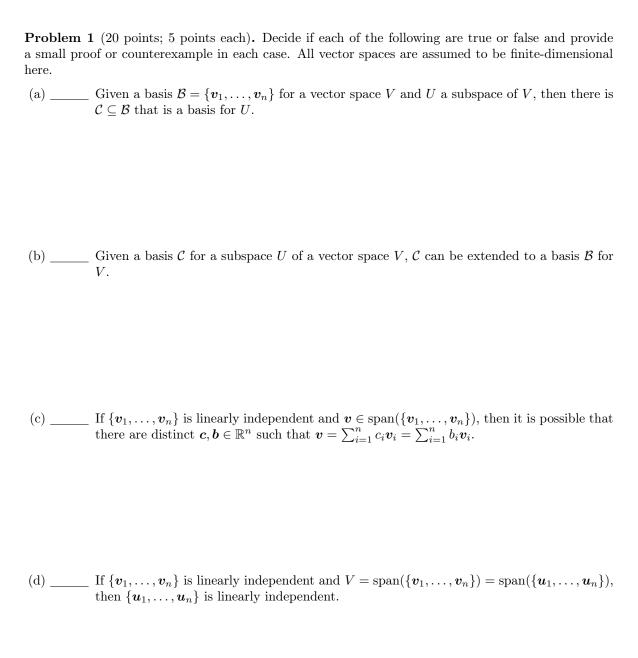
Quiz 3



Problem 2 (8 pts). Find a basis for span $\{u_1, \ldots, u_5\}$ from among the vectors u_1, \ldots, u_5 , where

$$oldsymbol{u}_1 = egin{bmatrix} 1 \ 2 \ 2 \end{bmatrix} \qquad oldsymbol{u}_2 = egin{bmatrix} 2 \ 5 \ 4 \end{bmatrix} \qquad oldsymbol{u}_3 = egin{bmatrix} 1 \ 3 \ 2 \end{bmatrix} \qquad oldsymbol{u}_4 = egin{bmatrix} 2 \ 7 \ 4 \end{bmatrix} \qquad oldsymbol{u}_5 = egin{bmatrix} 1 \ 1 \ 0 \end{bmatrix}$$

Make sure to show all work and explain your reasoning.

Problem 3 (7 pts). Let c_1, c_2, \ldots, c_n be n distinct real numbers. Let $p_i = \prod_{\substack{j=1 \ j \neq i}}^n (x - c_j)/(c_i - c_j)$. Show that $\mathcal{B} = \{p_1, p_2, \ldots, p_n\}$ is a basis for P_{n-1} . Hint: Consider $p_i(c_j)$.