1. Determine rank of the matrix $\left[\begin{matrix}2&-2&0\\-2&3&2\\0&2&4\end{matrix}\right]$ .
2. For what values of k the system of equations has a non trivial solution

x+2y+3z=kz

2x+y+3z=ky

2x+3y+z=kz

1. Solve the system of equations

$$-x+y+z=a$$

$$x-y+z=b$$

$x+y-z=c$

and using this find the inverse of $\left[\begin{matrix}-1&1&1\\1&-1&1\\1&1&-1\end{matrix}\right]$ .

1. Diagonalise A=$\left[\begin{matrix}1&-3&3\\3&-5&3\\6&-6&4\end{matrix}\right]$
2. Let $S=\{α\_{1},α\_{2},α\_{3},………α\_{n}\}$ be a basis for V.Examine if $\{α\_{1}+α\_{2},α\_{2}+α\_{3},………..,α\_{n}+α\_{1}\}$ is a basis of V.
3. Show that the set $R (set of real number)$forms a vector space over a field $Q$.What is the dimension of $R$ over $Q$.
4. Prove that for a matrix of order $m×n$ row rank of A =column rank of A.
5. Find algebraic and geometric multiplicity for each eigenvalues of A=$\left[\begin{matrix}1&-1&0\\1&2&-1\\3&2&-2\end{matrix}\right]$
6. If $T:R^{3}⟶R^{3}$ is a linear map which map the basis vectors (0,1,1),(1,0,1),(1,1,0) of $R^{3}$to the vectors (1,0,0),(0,1,0),(0,0,1) respectively.Find rank and nullity of T.