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Def: a) The identity motrix is a square matrix with all diagonal entries equal to 1 and all off diagonal entries equal to zero. Given P. Q & IRMAN RE IRMAN and SEIRMAN then

b) P+Q & IRMAN where IP+QI; = [P]; + [Q];

c) The transpose of P-Or P & IRMAN where IPT];

d) The trace of S ord t-(s) & IR

where to (S) = Z; = 1 [S]ii

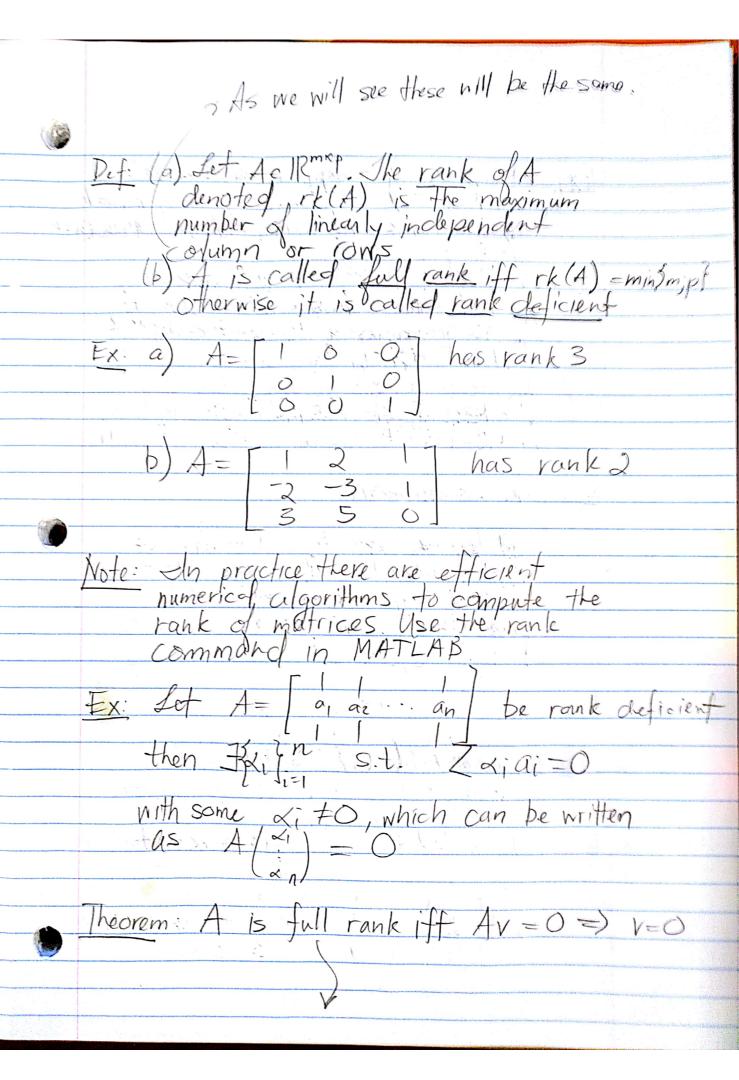
o) PR & IRMAN where IPR]ik = Z; = 1 [P]; [R];

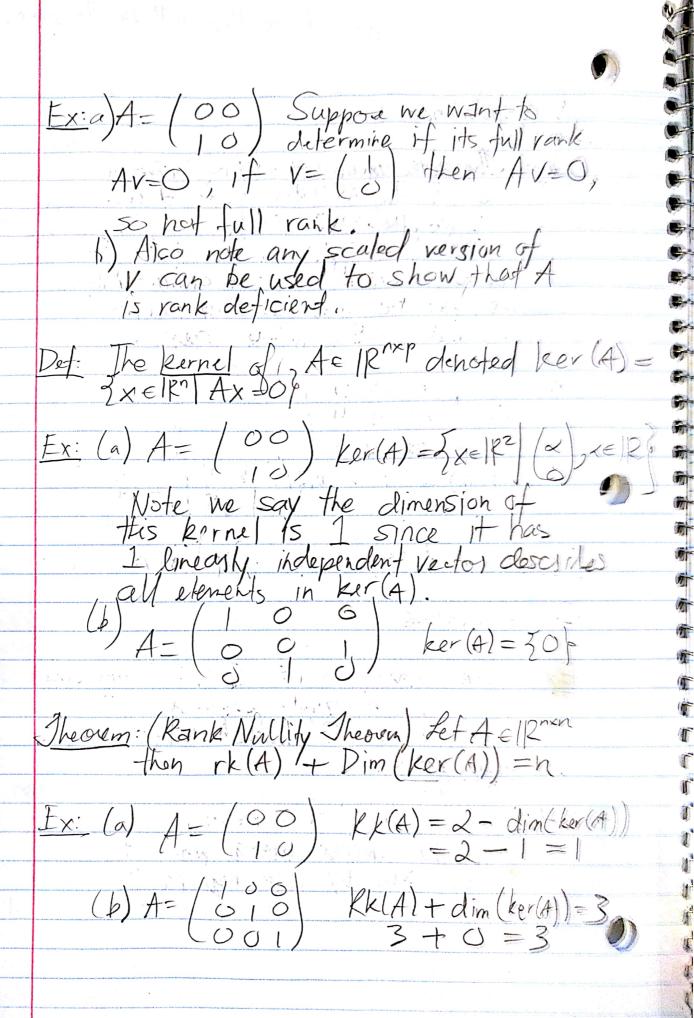
Note: -) PR) = R*P* where IPR]ik = Z; = 1 [P]; [R];

A. Timeral D I Ineas Independence Called linearly independent iff

Zxivi =0 => ai =0 Vi

Otherwise the set of vectors is called 6 15 linearly, dependent since first minus second rectors equely to the third vector.





B. Determinant Def The determinant of SEIRnan denoted det (S) of 151 15 defined as det(S) = Zj=1 (-1) I' [S] det (Sij) where Sije [kn-1]x(n-1) is obtained by deleting the first row and column jin the matrix S, where det (x) = x x = 18 Fx: A= [200] det(A) = 2 * det(3 4) = 2 * (3 9 - 4 4) = 22 Lemma: det (A) + On iff A is full ronk. C. Eigenvalues Def: The eigenvalues of SEIRNXH are scalars

nef such that SV = 2V for some

nonzero VEC which is called an eigenvector. Note: The eigenvectors correspond to the directions of the motrix along which the matrix along in that direction.

