

so Ax=b has infinite # of solutions. Check! $\begin{pmatrix} 2 \\ 2 \\ 0 \end{pmatrix} = 2X$ We know AX = b.

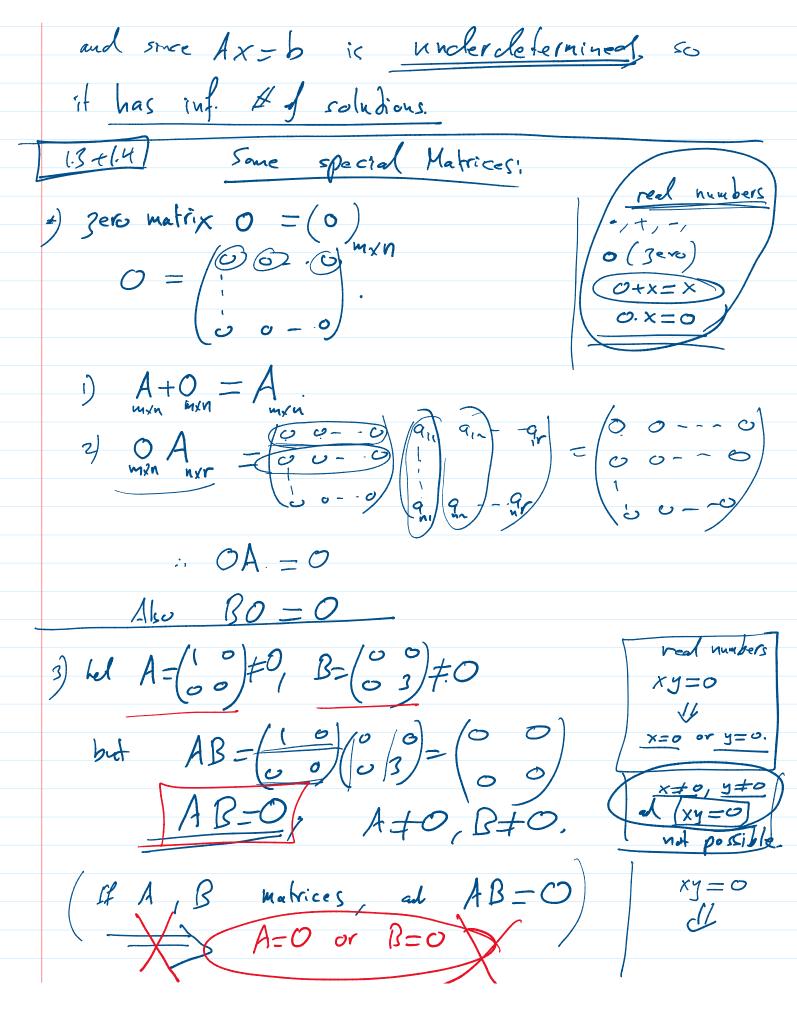
Andler solution is $A\begin{pmatrix} 2 \\ 0 \end{pmatrix} = A(2X) = 2(AX) = 2b + b + 4\begin{pmatrix} 1 \\ 0 \end{pmatrix} + 4\begin{pmatrix} 1 \\ 1 \end{pmatrix} = \begin{pmatrix} 1 \\ 34 \end{pmatrix}$ So $\begin{pmatrix} 2 \\ 2 \\ 0 \end{pmatrix}$ is not a solution. $\begin{pmatrix} 1 \\ 0 \end{pmatrix} + 4\begin{pmatrix} 1 \\ 1 \end{pmatrix} + 4\begin{pmatrix}$ If y and z are solutions to Ax=b. $b \neq 0$ 1) Is (y+z) = a solution to Ax=b.

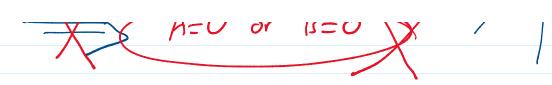
Consider $A(y+z) = Ay + Az = b + b = 2b \neq b$ -) y+z is not a solution to Ax= b. z) Is (+ 1)z a soludion 1. Ax=b Consider A (44+32) = A (44) + A (32) = 4 Ay + 2 Az = 2 b+ 3 b= b : 49+32 is a soludion to Ax=b. 3) Ly+BZ is a solution () 21. & If y, z are solutions to Ax=0?

of If y, z are solutions to Ax=0?

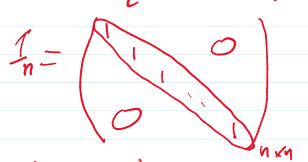
Ay=0, Az=0 I Is $\frac{y+2}{\cos sider}$ a solution 1 $A \times = 0$. A(y+2) = Ay + Az = 0 + 0 = 0so ytz is a solution to AX=0. 2) Is By tBz a soludion to AX=0 A(xy+pz) = xAy+pAz = L(0)+p(0) = 0.in xy+BZ is a solution to Ax=0 for any xBCR. If y is a solution to Ax=b Z is a solution to Ax=0. to /Ax=0/. y+Z solution to? consider A(y+2) = Ay+Az = b+0 = b. so y+2 is a sol. L Ax= b. $\frac{a_{12}}{a_{13}}$ $\frac{A}{3xy}$, $\frac{b=a_1+a_2-a_3+a_4}{2}$. is a solution to Ax = b.

so Ax = b is consistent.





* Identity matrix = $I_n = (d_{ij})$ $n \times n - metrix$ where $d_{ij} = \int 1$ if i = jof $i \neq j$ of $i \neq j$.



$$I_{s} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

1) Let A be mxn -matrix, then

$$AI = A$$
 and $I_{m myn} = A$.

$$I_{m} A_{m+n} = A$$

(x) Given
$$A = (a_{ij})_{n \times n}$$
. Is there a matrix there exists
$$B = (a_{ij})_{n \times n} \qquad \underbrace{S:t.} \qquad AB = I = BA.?$$

$$X \neq O$$
there exists
$$X \in CR \quad c.t.$$

$$X \in (x) = (1.)$$

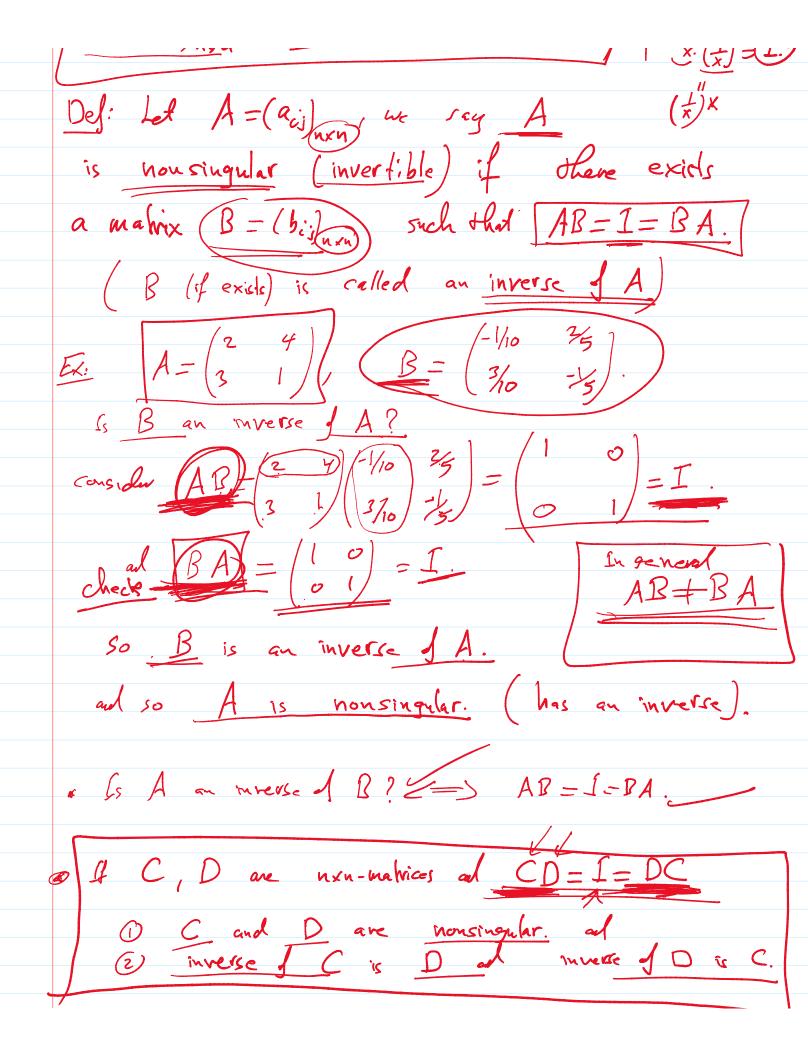
red numbers!

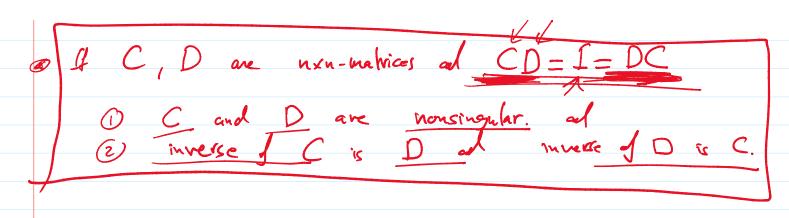
1) 1. x= x = x.1

 $\times (\cancel{\downarrow}) = 1.$

of for any (x+0)

L: multiplicative inverce Jx.





Fix:
$$A = \begin{pmatrix} 2 & 1 \\ 6 & 3 \end{pmatrix}$$
. Is A nonsingular.
try to find $B = \begin{pmatrix} b_1 & b_2 \\ b_3 & b_4 \end{pmatrix}$ s.t. $AB = I = BA$?