## 2.4 RULES FOR MATRIX OPERATIONS

MATRIX ALGEBRA

PROPERTIES OF MATRIX ALCIEBRA

Notation: (A) ij = (i,j) is the energ at the (ith row, jth column) of A

## SCALAR MULTIPLICATION

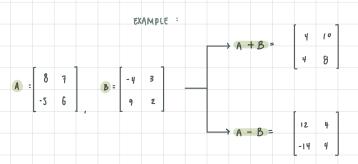
for ce R, mx n macrix A

cA = new matrix w/ eneries (cA);; = c (A);

EXAMPLE :

## ADDITION + SUBTRACTION

If A and B are matrices of the same size (same # of rows and columns) thun  $(A+B)_{ij} = (A)_{ij} + (B)_{ij}$ 

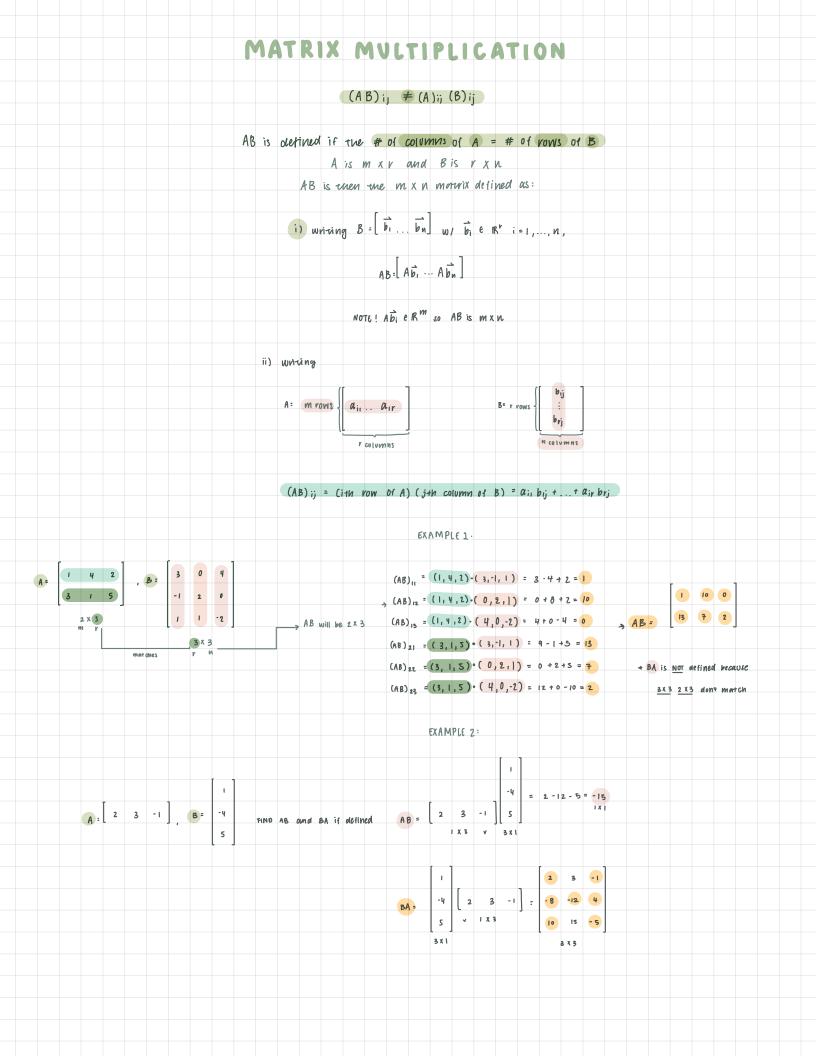


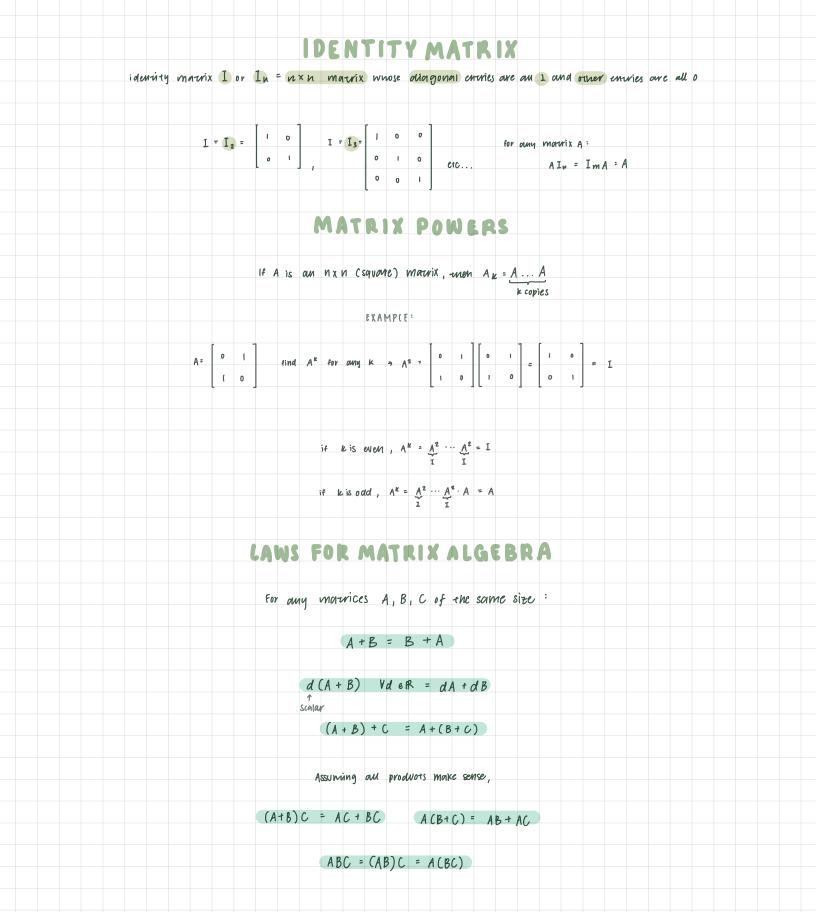
BUT IF ...

C = 0 S cund D = 7 0 4 - men C ± D are undefined.

ALSO !

zero matrix 0 whose entries one out zero come in any size and A+0=0+A=A for any matrix A and the zero matrix of the same size.





## FUNNY THINGS W/ THE LAWS T F: AB = BA for any nxn matrices A & B A B B $3 \cdot 2 \cdot 1 \cdot 7$ AB = $3 \cdot 1 \cdot 7$ if AB is defined, doesn't mean BA is defined T F If AB = AC and A 70 then B = C talse bc > even if A \$0, AB = AC but B \$\delta C\$ A: 2 0 B: 4 -7 c= 4 -7 C= 8 5 We know in scoular augebra it is true! T $\blacksquare$ : If AB = 0 then A = 0 or B = 0false DC → A= 1 -2 , 8= 6 10 ⇒ AB= 0 0 SO AB = 0 but A = 0 and B = 0