Work sheet week 8

C.1

If **A** is invertible then

A^{-1} exists such that $A \cdot A^{-1} = I$

Then

$A \cdot A \cdot A^{-1} = A \cdot I$

Using idempotency of **A**

$A \cdot A^{-1} = A = I$

C.2

$A = \begin{bmatrix} 0 & b \\ a & 0 \end{bmatrix} \Rightarrow A^2 = \begin{bmatrix} ab & 0 \\ 0 & ab \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \Rightarrow ab = 1$

This means that this holds for all a and b such that $a \cdot b = 1$

C.3

$A \cdot B \cdot (A \cdot B)^{-1} = I$

$A^{-1} \cdot A \cdot B \cdot (A \cdot B)^{-1} = A^{-1}$

$B \cdot (A \cdot B)^{-1} = A^{-1}$