

For all of the questions use your CAS to check your answers.

Question 1: Matrix Multiplication

- a) Calculate $A \times B$ by hand
- b) Calculate $B \times A$ on the CAS
- c) What is the output matrix called?
- d) Is one the inverse of the other? How can you tell?

$$A = \begin{bmatrix} -1 & 1.2 \\ 1 & -1 \end{bmatrix}$$

$$B = \begin{bmatrix} 5 & 6 \\ 5 & 5 \end{bmatrix}$$

Question 2: The Identity Matrix

I is the Identity matrix (effectively a 1 in real numbers).

- a) Calculate the scalar product $5I$
- b) Use the last answer to find $5I \times C$ on the CAS
- c) Calculate the scalar product $5C$
- d) Are $5I \times C$ and $5C$ the same. Why would they be the same (use normal numbers in your explanation)?

$$C = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

$$I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

Question 3: Inverse Matrix (sudo-division)

Use matrix A and B from the first question to answer this question.

- a) Calculate the determinant $\det(B)$ by hand
- b) Use $\det(B)$ to find B^{-1} (the inverse matrix of B)
- c) Use the CAS to calculate the determinant of A $\det(A)$.
(Interactive > Matrix > Calculation > det)