

Show absolutely all work (no scratch paper calculations unreported) on this sheet in a clearly organized way, labeling problems, parts and expressions written down.

- ① Write down a typical example of
- a 2×3 upper triangular matrix
 - a diagonal 2×2 matrix.
- ② Write out explicitly the identity matrix I_3 and the zero matrix O_{31} .
- ③ Evaluate a) $2A - B$, b) AB for $A = \begin{bmatrix} 12 \\ 34 \end{bmatrix}$, $B = \begin{bmatrix} 43 \\ 21 \end{bmatrix}$.
- ④ $B = \begin{bmatrix} 2 & -3 & 4 & 13 \\ 1 & 1 & -1 & -2 \\ 5 & 4 & 1 & 3 \end{bmatrix}$ is the augmented matrix of a linear system of equations in the variables x_i .
- Write out the (scalar) equations explicitly.
 - Show that the triple $(1, -1, 2)$ is a solution of this system.