Problem 1

Show, for $n \times n$ matrices $A$, $B$, $C$, that similarity is transitive: i.e. if $A \sim B$ and $B \sim C$, then $A \sim C$.

Problem 2 on back of sheet.
Problem 2

When we change from a standard basis to a new basis $\mathcal{B} = (\begin{pmatrix} -1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \end{pmatrix})$, this is geometrically like reflecting the plane in the vertical axis. Show that this change of basis indeed changes a horizontal shear ($A = \begin{pmatrix} 1 & k \\ 0 & 1 \end{pmatrix}$) with parameter $k$ to one with parameter $-k$.

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