Task 1

(A) $1 \cdot 3 + (-2) \cdot 0 + 0 \cdot 3 = 3$

(B) $v \rightarrow$ [illegible] 1×2

$w \rightarrow$ [illegible] 1×2

$v^T \cdot w = w^T \cdot v$

$2 \times 1 \cdot 1 \times 2 = 2 \times 1 \cdot 1 \times 2$

$2 \times 2 = 2 \times 2$ ✓

$v \cdot w^T = w \cdot v^T$

$1 \times 2 \cdot 2 \times 1 = 1 \times 2 \cdot 2 \times 1$

$1 \times 1 = 1 \times 1$ TRUE, 1x1 matrix

(C) $\begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix}$ → not sure

(D) ASSOCIATIVITY: $(AB)C = A(BC)$

only if col A = rows B

and cols B = rows C

(E) $x = A \cdot v = w$

$v = A^{-1} \cdot w$

not sure

(F) 1

(G) $\{\text{rank}(A) = n\} \Rightarrow A$ is invertible

(H) $\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix} \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ ✓

$\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$