Homework

Exercise 1:

Let $A, B \in M_n$.

3. If A, B are Hermitian then $aA + bB$ is Hermitian

4. $A - A^*$ is skew-Hermitian for all $A \in M_n$.

Homework

Exercise 2. The real symmetric matrix $\quad M = \begin{bmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 2 \end{bmatrix}$

is positive definite? is positive semi-definite? is negative definite? is negative semi-definite?

Exercise 3. $\quad$ *Let* $A, B \in M_n(\mathbb{C})$. *Then*

3. B^*B *is positive semidefinite.*

4. *If* B *is invertible then* B^*B *is positive definite.*