

Let a_1, a_2, \dots, a_n be a set of real numbers. $C = (c_{ij}) \in \mathbb{R}^{n \times n}$ is a matrix and the entries of C is defined as $c_{ij} = |a_i| + |a_j| - |a_i - a_j|$. Prove that C is positive semidefinite. *Hint: you can permute the rows and columns of C so that it could have blocked structure.*