MA565: Homework 2

Exercise 2.1. [4pts] Show that for any $n \times n$ matrices A, B the following holds:

(1) $\overline{(AB)} = \overline{A}\,\overline{B}$.

(2) $(AB)^T = B^T A^T$.

Exercise 2.2. [6pts] Is the following matrix unitary/Hermitian/neither?

$$A = \begin{bmatrix} \frac{1+i}{2} & \frac{i}{\sqrt{3}} & \frac{3+i}{2\sqrt{15}} \\ \frac{-1}{2} & \frac{1}{\sqrt{3}} & \frac{4+3i}{2\sqrt{15}} \\ \frac{1}{2} & \frac{-i}{\sqrt{3}} & \frac{5i}{2\sqrt{15}} \end{bmatrix}$$