

Mini report #2 (Advanced Automation) 2022.12.1

Student #: _____ Name: _____

[NOTICE]

- write by hand
 - due date: 2022/12/7 17:00; place of submission: **room 405 @ Dept. Mech. Bldg. 1**
 - don't answer in approximated values (write $\sqrt{2}$ instead of 1.4142 , for example)
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Let M be a matrix given as:

$$M = \begin{bmatrix} 0 & 0 \\ 2j & \frac{1}{\sqrt{2}} \end{bmatrix}.$$

Answer the followings:

(1) Show that $\bar{\sigma}(M) \geq 1$.

(2) Find a positive real number $d > 0$ such that $\bar{\sigma}(W^{-1}MW) < 1$, where $W = \begin{bmatrix} d & 0 \\ 0 & 1 \end{bmatrix}$.