

# Mini report #2 (Advanced Automation) 2018.11.22

Student #: \_\_\_\_\_ Name: \_\_\_\_\_

## [NOTICE]

- write by hand
  - due date: 2018/11/28 17:00; place of submission: room 405(機械建設1号棟 小林)
  - check if your answer is correct or not before submission by using Matlab
  - Don't answer in approximated values (write  $\sqrt{2}$  instead of 1.4142)
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Let  $M$  be a matrix given as:

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

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  $W = \begin{bmatrix} d & 0 \\ 0 & 1 \end{bmatrix}$ .