MATH 201 FALL 2019 PRACTICE TEST #2

Write clearly, on separate paper.

(1) [5pts.] Show that $\log_7 16$ is irrational.

(2) [5pts.] Let $\{E_i \mid i \in I\}$ be an indexed family of nonempty subsets of a bounded subset E of $\mathbb{R}$. Show that

$$\sup \bigcup_{i \in I} E_i = \sup\{\sup E_i \mid i \in I\}.$$

(3) [4pts.] Find a number M such that $|x^3 - 3x^2 + 10| \leq M$ for all $-2 \leq x \leq 1$. Justify your claim.