

MATH 2010-2 FALL 2024 PRACTICE TEST #1

*Write clearly, on separate paper. All questions carry equal weight.
You will receive credit for your three best answers.*

Prove or disprove three of the following statements:

(1) For subsets A, B, C of a universe U , one has

$$A \cap (B \setminus C) = (A \cap B) \setminus (A \cap C).$$

(2) If $0 < x < y$, then $x^3 < y^3$.

(3) For integers l and m , the integer $l^2 + lm^2$ is even.

(4) The real number $\log_4 9$ is irrational.