

MATH 201 SPRING 2021 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 ,

$$(A \setminus B) \cap \overline{C} = A \setminus (B \cup C).$$

(2) For integers x and y , if $3x - 5y$ is even, then x and y have opposite parity.

(3) If n is an odd integer, then $4 \mid 5n^3 - n^2 + 5n - 1$.

(4) If x is a positive real number, then

$$\frac{4}{x} \geq 4 - x.$$