

MATH 201 SPRING 2019 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 a subset A of a universe U , one has

$$\mathcal{P}(U) \setminus \mathcal{P}(A) = \mathcal{P}(\sim A).$$

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

(3) For positive integers a, b, c , if $a \mid b$, $b \mid c$, and $c \mid a$, then $b = c$.

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