

MATH 233
Fall 2018
Quiz #3 B

Duration: 50 minutes.

Remark: Show your thinking/work. Do not just write a number or a formula as a result.

1. Fermat's Little Theorem states that:

If p is a prime and a is an integer then, $p \mid a^p - a$

Show that Fermat's Little Theorem is invalid if we drop the assumption that p is a prime.

2. Prove that $\gcd(a,b) = \gcd(a,r)$ where r is the remainder when we divide b by a .

(**Hint:** First prove that $\gcd(a,b) = \gcd(a, b-a)$)