

Name:

ID:

Week of Oct. 9

Version 1

Math 120B - Quiz #2

In this quiz you may use both sides of this sheet for your work if you need to. Please clearly separate the work from different problems by drawing lines between them, and please write complete proofs where required. (If you are not sure what you can assume for a proof, **ask the instructor or prove your assumption**)

1. (5 pts.) Give the characteristic of the following rings and say whether each is an integral domain or not:

- (a) \mathbb{Z}_5
- (b) $\mathbb{Z}_2 \times \mathbb{Z}_7$
- (c) $\mathbb{Z}_2 \times \mathbb{Z}_8$
- (d) $2\mathbb{Z}_6 = \{\overline{0}, \overline{2}, \overline{4}\}$
- (e) \mathbb{R}

2. (4 pts.)

- (a) State Euler's Theorem.
- (b) Compute the last two digits of the following large number:

$$7^{2050}$$

- (1 pt) Ask one question related to Ring Theory or suggest a way to improve discussion:
