

**Math 31: Quiz 6**

Name: \_\_\_\_\_

Instructions: Answer the following questions without consulting any outside source (such as notes or the textbook).

1. A ring  $R$  is a set with two binary operations  $+$  and  $\cdot$  such that  $R$  is an abelian group under addition, and the following properties hold for multiplication:

- (a)

- (b)

Hint: If you state these in terms of ring elements, the last property should have two equations.

2. An ideal  $I$  of a ring  $R$  is a subring satisfying the following property:
3. Give one reason why ideals are important.

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