Assignment 1; Due Friday, January 13

Read the preface starting at the top of page 3 and continuing to the bottom of page 4. This section is about group theory. Some parts will be easy and some parts will be hard; ignore the hard sections for now, concentrating on points covered in the first course lecture.

Do the following exercises:

- Prove from first principles that the groups Z and $Z \times Z$ are not isomorphic. Graduate students: no fair using fancy theorems.

- Find an explicit group isomorphism from Z_{15} to $Z_3 \times Z_5$, showing clearly that your map is one-to-one and onto.

- Show that Z_{12} is not isomorphic to $Z_2 \times Z_2 \times Z_3$ by finding a property of one of these groups which is not true of the other.

Read section 13 on homotopy of continuous maps. Then do the following exercises:

- 13.4a and (graduate students only) 13.4b

- 13.4ce and (graduate students only) 13.4f

- 13.10abl. Problems a and l will be fun if you draw pictures.

- (graduate students only) 13.10ef.