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# MTH 427/527 HOMEWORK 1

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## Exercise 2.1

In order to solve this problem it will be convenient to start with the following fact:

**Lemma 1.** *If  $(X, \varrho)$  is a metric space then the identity function  $f: X \rightarrow X$ ,  $f(x) = x$  is continuous (with respect to the metric  $\varrho$ ).*

*Proof.* Here is the argument...

□

Using Lemma 1 we will prove that the following is true:

**Theorem 2.** *Some important statement here...*

*Proof of Theorem 2.* We argue by induction with respect to  $n$ . For  $n = 1$  ...

□

Exercise 2.1 follows immediately from Theorem 2. Indeed, assume that...

### **Exercise 2.3**

We will prove this by contradiction. Assume that....

## Inserting images

In some cases you may want to include a picture in your solution. While it is possible to create pictures using  $\text{\LaTeX}$  (almost all pictures in the lecture notes were done this way), a simpler method is to draw a picture on a piece of paper, take a photo, and insert it in the  $\text{\LaTeX}$  document. Here is an example:

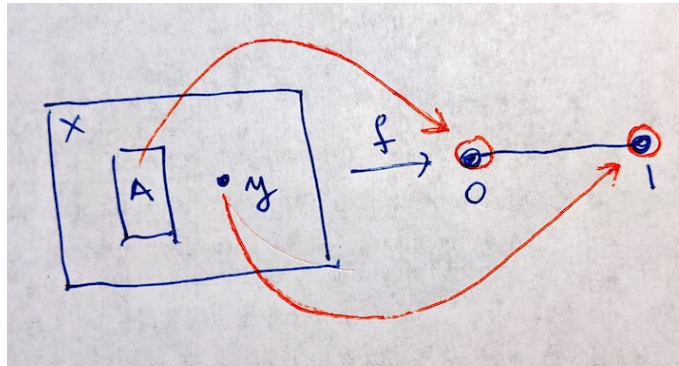


Figure 1: This is a sample image

Inserted images can be equipped with labels, so they can be references in the text. For example, the image above can be referenced as Figure 1. You may need to compile this file twice before cross-references are inserted.