#### Course 212 2004-05

#### Sheet 2

Due: after the lecture next Monday

## Exercise 1

If (A, d) is a metric space and  $x, y, z \in A$ , show that

```
|d(x,z) - d(y,z)| \le d(x,y).
```

# Exercise 2

Prove that if  $d_1$  and  $d_2$  are metrics on a set A, then  $d_1 + d_2$  and  $\max(d_1, d_2)$  are also metrics on A.

## Exercise 3

Give an example of a metric space and two balls in it with different radii such that the ball with the smaller radius contains the ball with the bigger radius and the two balls do not coincide.