

Marta Lewicka, Math 5535, Winter 2005

## Homework 7

1. Show that the tent map is transitive (compare Elaydi problem 2 pg 109).
2. Elaydi problem 6 pg 109.
3. Elaydi problem 7 pg 109.
4. Elaydi problems 4 and 5 pg 121.
5. Elaydi problem 6 pg 122.
6. Elaydi problem 11 pg 123.
7. Recall that a sequence  $\{x_n\}_{n=1}^{\infty}$  of points in a metric space  $(X, \rho)$  converges to  $x \in X$  provided that:  $\lim_{n \rightarrow \infty} \rho(x_n, x) = 0$ .  
Prove that a function  $f : (X, d) \rightarrow (Y, \rho)$  between two metric spaces  $(X, d)$  and  $(Y, \rho)$  is continuous if and only if it has the following property:

For any sequence  $\{x_n\}$  of points in  $X$ , if  $\{x_n\}$  converges to some  $x \in X$ , then the sequence  $\{f(x_n)\}$  converges to  $f(x)$  in  $Y$ .