Problem Solving
Set 13

16 July 2012

1. Find all continuous functions $f : \mathbb{R} \to \mathbb{R}$ such that $f(x) - f(y)$ is rational for all reals x and y such that $x - y$ is rational.

2. Is it true or false that for each real number $\epsilon > 0$ there exist positive integers m and n such that

$$0 < \sqrt{n} - \sqrt{m} - \pi < \epsilon \ ?$$