# Notes

November 24, 2014

## example 5.6.E

let $T(x)$ be the temperature at point $x$ on surface of planet where we assume that the planet is a sphere. $T$ is a continuous function

Then $\exists x$ on the surface of the planet such that $T(x) = T(-x)$.

### proof

$f(x) = T(x) - T(-x)$ and $f(-x) = -f(x)$ for all $x$ on surface. either $f(x) = 0 \forall$ or $\exists x_0$ such that $f(x_0 \neq 0$ assume $f(x_0) > 0$ then $f(-x_0) < 0$ and there is a point in between where $f$ is 0.

## example 5.6.f

map from $[0, 2\pi) \to$ unit circle $\to \mathbb{R}$