MASS-11; ANALYSIS

FALL 2011

A.Katok

HOMEWORK # 5

Due on Wednesday September 28

If you have not completed HOMEWORK N4
you may return remaining problems until MONDAY SEPTEMBER 26

20. Recall that an *extreme point* of a convex set C in a linear space L is a point $x \in C$ such that if $x = \frac{y+z}{2}$ where $y, z \in C$, then $y = z = x$.

Find extreme points of the closed unit ball in the norm $\| \cdot \|_p$, $p \geq 1$ in $\mathbb{R}^n$

Hint: Consider cases $p > 1$ and $p = 1$ separately.

21. Find extreme points of the octacube (See problem 16)

22. Find extreme points of the closed unit ball in the space $C([0, 1]$.