ACES
MAA4102, MAA5104

Class-D

Prof. JLF King
27Oct2008

Hello. *Please write* **DNE** *in a blank if the described object does not exist or if the indicated operation cannot be performed.*

D1: Show no work.

z10 There is a reading assignment over the break.

True! **Yes!** **We have a Break??**

a20 Subsets B,$C \subset X^{\text{MS}}$ share a common point, and each is path-connected.
Then $B \cap C$ is path-connected. *T* *F*
Then $B \cup C$ is path-connected. *T* *F*

b That 1/5 is a ***Lebesgue number*** of open-cover $\mathcal{C}$ of (X, d), means that
.....
.....
.....
Patches $\mathcal{C} := \left\{(-\infty, 28], [7, 33), [29, +\infty)\right\}$ cover $\mathbb{R}$. Thus MaxLebesgueNumber($\mathcal{C}$)= .....

c Stereo-dist $\boldsymbol{\sigma}(\frac{1}{4102}, -4102)$= .....
Let $S := \{\infty\} \cup \left\{ n \cdot [-1]^n \;\middle|\; n \in \mathbb{Z}_+ \right\} \subset \dot{\mathbb{R}}$. Then
$\boldsymbol{\sigma}\text{-Diam}(S) = \boldsymbol{\sigma}($ ..... , ...).

d P.L fncs f_n converge ptwise, but **not** uniformly, to $x \mapsto 2x$ where the cutpoint and height tuples of f_n are $\vec{\mathbf{p}} := (1, \quad 2, \quad 3, \quad 4)$
and $\vec{\mathbf{h}} := (2,$ ..... , ... $, 8 + \frac{1}{n})$.

P.L fncs g_n converge ptwise, but **not** uniformly, to $-Id$ where the cutpoint and height tuples of g_n are
$\vec{\mathbf{p}} := (\ 2,\ 3,$ ..... $,\ 5)$
and $\vec{\mathbf{h}} := (-2, -3,$ ..... $, -5)$.

e20 Let L be the (natural) logarithm function. So $\text{Lip}(L\lfloor_{[3,\infty)})$= ..... , and $\text{Lip}(L\lfloor_{(0,3]})$= .....

f20 Every compact MS is complete. *T* *F*
Suppose compact MS Y is a subspace of MS Ω. Then Y is automatically Ω-closed. *T* *F*

Essay question: Carefully write a triple–spaced essay solving the problem.

D2: Prove that the interval $J := [4, 7]$ is connected.

End of Class-D

D1:	___ ___ ___	160pts
D2:	___ ___	95pts
Poorly stapled, or missing ordinal :	___	−5pts
Missing name, or honor sig :	___	−5pts
Total:	___ ___ ___	255pts

Please PRINT your name and ordinal. Ta:

Ord: .....

HONOR CODE: *"I have neither requested nor received help on this exam other than from my professor."*

Signature: .....