

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

D4: Show no work.

z5 ACTors will have two ELEUSIS vegetarian-potlucks, the evenings of Dec. 1 and Dec. 2, right after Thanksgiving vacation.

True! **Yes!** **Cool! Can I make an Eleusis rule?**

a Stereo-dist $\sigma(\frac{1}{7222}, -7222) =$ _____

Let $S := \{\infty\} \cup \{[-3]^n \mid n \in \mathbb{Z}_+\} \subset \mathbb{R}$. Then

σ -Diam(S) = $\sigma(\text{_____}, \text{_____})$.

b That $1/5$ is a *Lebesgue number* of open-cover \mathcal{C} of (X, d) , means that _____

Patches $\mathcal{C} := \{(-\infty, 28], [17, +\infty)\}$ cover \mathbb{R} . Thus $\text{MaxLebesgueNumber}(\mathcal{C}) =$ _____

c P.L fncs g_n converge ptwise, but **not** uniformly, to $-Id$ where the cutpoint and height tuples of g_n are

$\vec{p} := (2, 3, \text{_____}, 5)$

and $\vec{h} := (-2, -3, \text{_____}, -5)$.

P.L fncs f_n converge ptwise, but **not** uniformly, to $x \mapsto 2x$ where the cutpoint and height tuples of f_n are

$\vec{p} := (1, \text{_____}, 2, 3, 4)$

and $\vec{h} := (2, \text{_____}, \text{_____}, 8 + \frac{1}{n})$.

d10 Let L be the (natural) logarithm function. So $\text{Lip}(L|_{[3, \infty)}) =$ _____, and $\text{Lip}(L|_{(0, 3]}) =$ _____

e 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, triple-spaced:

D5: Let J be the interval $(2, 6)$. Suppose functions $H_n \xrightarrow{\text{uniformly}} f$, where $f, H_n: J \rightarrow \mathbb{R}$. If each H_n is uniformly-cts, prove that f is **uniformly-cts**.

End of Class-D

D-Home: _____ 265pts

D4: _____ 95pts

D5: _____ 45pts

No name, or no honor code: _____ -5pts

Unstapled, or no ordinal : _____ -5pts

Total: _____ 405pts

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: _____