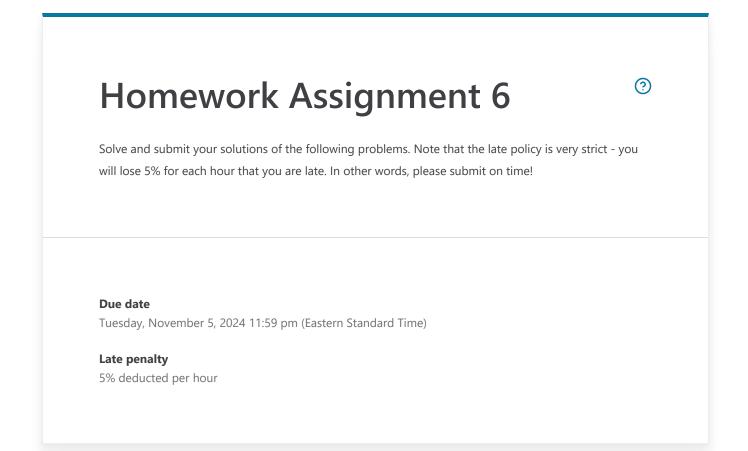
This is a preview of what students will see when they are submitting the assignment. Interactive features are disabled.



Q1 (0 points)

Read sections 23, 24, 26, and 27 in Munkres' textbook (Topology, 2nd edition). Remember that reading math isn't like reading a novel! If you read a novel and miss a few details most likely you'll still understand the novel. But if you miss a few details in a math text, often you'll miss everything that follows. So reading math takes reading and rereading and rerereading and a lot of thought about what you've read.

Also, solve (but do not submit your solutions) problems 1, 3, and 8acd on pages 157-158 and problems 1 and 6 on pages 170-171 of the Munkres text.

Q2 (10 points)

(Munkres pp 158 ex 2)

Let $f: S^1 = \{z \in \mathbb{C}: |z| = 1\} \to \mathbb{R}$ be a continuous function. Show that there exists $z \in S^1$ such that f(z) = f(-z).

Q3 (10 points)

(Munkres pp 158 ex 8b)

If $A \subset X$ and A is path connected, is \bar{A} always path connected too?

Q4 (10 points)

(Munkres pp 158 ex 10)

Show that an open connected subset U of \mathbb{R}^n is path-connected.

Hint. Pick $x_0 \in U$ and show that the set of points in U that can be reached by a path from x_0 is clopen.

Q5 (10 points)

(Munkres pp 171 ex 2)

Let X be an uncountable set (e.g., \mathbb{R}).

(a) Show that the finite complement topology on X is compact.

(b) Is the countable-complement topology on X compact?

Q6 (10 points)

(Munkres pp 170 ex 4)

Show that every compact subspace A of a metric space M is closed and bounded (bounded means that the set of distances between elements of A is bounded).

Is the converse true? Namely, is it true that if A is closed and bounded in a metric space M then it is compact?



(Munkres pp 170 ex 5)

Homework Assignment 6 preview | Crowdmark

Show that if A and B are disjoint compact subsets of a Hausdorff space X, then there exists disjoint open sets U and V in X such that $A \subset U$ and $B \subset V$.

Ready to submit?

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 \rightarrow Please ensure all pages are in order and rotated correctly before you submit

You will not be able to resubmit your work after the due date has passed.

