

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

Homework Assignment 6



Solve and submit your solutions of the following problems. Note also that the late policy is very strict - you will lose 5% for each hour that you are late. In other words, please submit on time!

Due date

Friday, October 24, 2025 11:59 pm (Eastern Daylight Time)

Late penalty

5% deducted per hour

Q1 (10 points)

Suppose $|G| = pq$ where p and q are prime, where $p < q$, and where p does not divide $q - 1$. Show that G is cyclic.

Q2 (10 points)

Suppose $|G| = 56$. Show that for some prime p dividing 56, G has a *normal* Sylow- p subgroup.

Hint. Otherwise there's not enough room for all the mess.

Q3 (10 points)

Prove if p is a prime and $p \mid |G|$, then G has an element of order p . (G may not be Abelian. In class we have proven the statement only for Abelian groups).

Q4 (10 points)

Find all the Sylow subgroups of S_3 and of $S_3 \times S_3$.

Q5 (10 points)

Find all the Sylow subgroups of S_4 .

Q6 (10 points)

How many elements of order 7 are there in a simple group of order 168?

Ready to submit?

- 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.

 Please wait...