- From Section 11:
  1. Please solve exercises 11.2, 11.5, and 11.8 from the textbook. *I recommend solving 11.5 and 11.8 over the weekend, as they will be useful when we start Section 13.*
  2. Consider the subgroup $H = \langle 4 \rangle \leq \mathbb{Z}_{24}$.
     (a) Why is $H \lhd \mathbb{Z}_{24}$?
     (b) What familiar group is $\mathbb{Z}_{24}/H$ isomorphic to?
     (c) What's the order of the coset $\langle 4 \rangle + 14$ in $\mathbb{Z}_{24}/H$?
  3. Show that an abelian group of order 33 must be cyclic.
- From Section 13:
  1. Please solve Exercises 13.7, 13.13, and 13.16 from the textbook.
- From the presentations on Tuesday, November 8:
  1. Please find and list all the distinct primitive roots modulo n for $n = 9, 10, 11, 12$. If there are no primitive roots modulo n, please explain why.
  2. Soto's work proves that, in the Solow model, we are unable to distinguish between the effects of returns to scale and technological progress, if we use the following effective capital and effective labor functions:

     $$\overline{K} = e^{at}K \qquad \overline{L} = e^{at}L.$$

     Prove that we could distinguish between the two effects if we change the assumptions such that

     $$\overline{K} = a(1+t^2)K \qquad \overline{L} = a(1+t^2)L.$$
- EXTRA CREDIT problem (from Andrew, Arun, and Mike):
  Find the first collection of 38 consecutive positive integers, none of which has the sum of digits divisible by 11.