MAT 150A, Fall 2021
Homework 4
Due before 12:10 on Wednesday, October 27

Please write the homework solutions in connected sentences and explain your work. Mark the answers to each question. Scan or take pictures of your homework and upload it to Gradescope before due time.

1. Solve the system of equations $x = 3 \mod 5, x = 10 \mod 11$.

2. Is it possible to construct an injective homomorphism (a) from $\mathbb{Z}_3$ to $\mathbb{Z}_4$? (b) From S_3 to S_4?

3. A finite group G contains an element x of order 10 and also an element y of order 6. What can be said about the order of G?

4. Let $\varphi : G_1 \to G_2$ be a group homomorphism. Suppose that $|G_1| = 18, |G_2| = 15$ and that φ is not the trivial homomorphism. What is the order of the kernel?