Homework 3
Fall 2021
Due on Saturday December 18, 2021, 11:59 p.m. via Blackboard

If you do not have the textbook, use the following link to download it

https://emadalsuwat.github.io/cryptography/textbook1.pdf

Do textbook problems:

- Problem 8.4 (Page 263)
- Problem 8.11 (Page 264)
- Problem 8.18 (Page 265)
- Determine the following:
  - Ø(49)
  - Ø(144)
- Find the order of x modulo n if
  - x = 5 and n = 7
  - x = 4 and n = 7
- How many primitive roots Modulo 11? Show your answer step by step.
- If you know that 3 is a primitive root modulo 17, find the other primitive roots modulo 17.
- Use Rabin–Miller primality test to show that 137 is prime?
- **(Graduate Students ONLY) answer the following 2 questions:**
  - Use Fermat's primality test to show that 7 is prime?
  - Use AKS primality test to show that 5 is prime?

- Problem 9.2 (a and c only) (Page 292)
- (**Optional**) Problem 9.3 (Page 293)