ECON 0150 | Spring 2025 | Homework 3.1

Due: Friday, February 27, 5PM

Homework is designed to both test your knowledge and challenge you to apply familiar concepts in new applications. Answer clearly and completely. You are welcomed and encouraged to work in groups so long as your work is your own. Use the provided datasets to answer the following questions. Then submit your figures and answers to Gradescope.

Q1. Normal Random Variable

The wait times (in minutes) at a restaurant location follows a normal distribution with mean (μ) = 12 minutes and standard deviation (σ) = 2.5 minutes. Start each question with a rouch sketch of your answer, then find the number using code. Two useful functions for this Homework from Exercise 3.1:

```
from scipy import stats
# stats.norm.cdf()
# stats.norm.ppf()
```

a) What is the population mean (μ) wait time *(warm up question)*?

b) What is the theoretical variance for the wait time *(warm up question)*?

c) What is the wait time which is longer than exactly 77 percent of wait times *(use python)*?

d) What is the probability that a wait time will be greater than 10 minutes *(use python)*?

e) What is the probability the wait time will be between 10 and 14 minutes *(use python)*?

f) What is the probability the wait time will be less than 7 or greater than 17 *(use python)*?