There are two problems from the book and three problems labeled A, B, C.

Exercise 4.12 (ignore the "Poisson" part)

Exercise 4.13 (about X, Y, Z)

For Problem A, notice that the definition of standard deviation of a random variable X makes sense only if $V(X) \geq 0$.

A.A. How do we know that $V(X) \geq 0$ for all random variables X? (Hint: Use the definition of variance.)

A.B. Under what conditions is $V(X) = 0$? (Hint: Use the definition of variance. Also, there is a specific answer, to which we alluded on Day 11 of class.)

For Problem B, make sure to read page 154 of our textbook, which is about properties of expectation, variance, and standard deviation. Then:

B. Do Classwork Problem 40, which is about temperatures.

C. Let $X \sim \text{Geom}(p)$. Using the lemma that I stated today in class, compute $V(X)$. Simplify as much as possible.