M378K Introduction to Mathematical Statistics
Problem Set #5
Cumulative distribution functions: Named continuous distributions.

Problem 5.1. Source: Sample P exam, Problem #126.

A company's annual profit is normally distributed with mean 100 and variance 400. Then, we can express the probability that the company's profit in a year is at most 60, given that the profit in the year is positive in terms of the standard normal cumulative distribution function denoted by Φ as

$$1 - \frac{\Phi(2)}{\Phi(5)}$$

Problem 5.2. Source: Sample P exam, Problem #267.
The lifetime of a certain electronic device has an exponential distribution with mean 0.50*. Calculate the probability that the lifetime of the device is greater than* 0.70*, given that it is greater than* 0.40*.*