STAT/ME 424 HW 1
(due 9 AM Tue, Sep 27, 2022, in Canvas)

1. Aluminum pins manufactured for the aviation industry have diameters that are normally distributed with mean 10 mm and standard deviation 0.02 mm. Holes are automatically drilled on aluminum plates, with diameter having a normal distribution with mean η mm and standard deviation 0.02. Find the value of η such that the probability is 0.01 that a randomly selected pin will not go through a randomly selected hole (i.e., the hole is too narrow for the pin).

2. A ten-foot cable is made of 50 strands. Suppose that individually, 10-ft strands have breaking strengths with mean 45 lb and standard deviation 4 lb. Suppose further that the breaking strength of a cable is the sum of the strengths of the strands that make it up.

   (a) Find, stating any assumptions, the mean and standard deviation of the breaking strengths of such 10-ft cables.

   (b) Find the probability that a 10-ft cable of this type will support a load of 2230 lb. Again, state any assumptions that you make.