Math 153 - Quiz 9

April 28, 2016

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Certain power drills have power consumptions that are normally distributed with mean 295 watts and standard deviation 12 watts. A hardware store chain has just received a shipment of 5000 drills, and the purchasing manager selects 9 drills at random to test. What is the probability that the mean power consumption of the sample is greater than 300 watts?

CLT #2

$$P(\bar{x} > 300) = \text{normalcdf}(300, 999999, 295, 12/\sqrt{9})$$

$$\approx \boxed{0.1056}$$

2. (4 points) Shoulder breadths of adult men have mean 18.2 in and standard deviation 1.0 in. What is the probability that the mean shoulder breadth of a sample of 36 men is less 18.4 in?

CLT #1

$$P(\bar{x} < 18.4) = \text{normalcdf}(-999999, 18.4, 18.2, 1/\sqrt{36})$$

$$\approx \boxed{0.8849}$$

3. (2 points) ACT scores for incoming students at a certain university have mean 24 and standard deviation 2. A sample of 12 incoming students is selected at random. What must be assumed in order to compute the probability that the mean score of the sample is less than 23? (Do not compute anything!)

IN ORDER TO USE THE CLT, WE MUST ASSUME THAT THE POPULATION OF ACT SCORES FOR INCOMING STUDENTS IS NORMALLY DISTRIBUTED.