Statistics HW10 b03705002林軒逸

9.17

Since the data is normally distributed, so we can use central limit theorem.

a.

Sample=1

By central limit theorem, Mean=117, standard deviation=5.2.

P(X>=120)= P(X>120)

=1- NORMDIST(120,117,5.2,1)=0.28199571

The probability of one selected subcomponent is longer than 120cm is 28.199571%.

b.

Sample=4.

By central limit theorem, Mean=117, standard deviation=5.2/4^(1/2)=2.6

P(X>=120)=P(X>120)

=1- NORMDIST(120,117,2.6,1)= 0.12428162

The probability of the mean of one selected four subcomponents is longer than 120cm is 12.428162%.

c.

0.28199581^4= 0.00632368

The probability of one selected four subcomponent are all longer than 120cm is 0.632368%.

9.21

Since the data is normally distributed, so we can use central limit theorem.

a.

Sample=1

By central limit theorem, Mean= 6, standard deviation=1.5.

P(X>=7)= P(X>7)

=1- NORMDIST(7,6,1,5,1)= 0.25249254

The probability that a randomly selected North American adult watches TV more than seven hours is 25.249254%.

b.

Sample=5

By central limit theorem, Mean= 6, standard deviation=1.5/5^(1/2)=0.67082039

P(X>=7)= P(X>7)

=1- NORMDIST(7,6,0.67082039,1)= 0.06801856

The probability of the mean of five randomly selected North American adults watch TV more than seven hours is 6.801856%.

c.

0.25249254^5= 0.00102623

The probability of all the five randomly selected North American adults watch TV more than seven hours is 0.102623%.

9.29

Since the data is normally distributed, so we can use central limit theorem.

There are five days, that is, the samples are five.

By central limit theorem,

Mean=275, standard deviation=75/5^(1/2)= 33.5410197

What we want to know is 1500 faxes per week. That is, 300 faxes per day.

P(X>=300) = P(X>300)

= 1-NORMDIST(300,275,75/5^(1/2),1)= 0.22802827

The probability that in 1 week more than 1500 faxes will be received is 22.802827%.