STA-3145 - ch. 7

4.14 - p. 383 (b)

90% Conf. Int. for the mean price \( \mu \) see

\( n = 20, \ \bar{x} = 83.75, \ \sigma = \$28.97 \) (part a)

\[ \bar{x} - E \leq \mu \leq \bar{x} + E \]

where \( E = t_c \frac{\sigma}{\sqrt{n}} \frac{df=n-1}{df=19} \)

Calculation of \( E \): \( C = 0.90 \)

for df 19, \( t_c = 1.729 \) from t-table

\[ E = 1.729 \times \frac{28.97}{\sqrt{20}} = 1.729 \times \frac{28.97}{4.472} = 1.729 \times 6.475 = 11.201 \]

Therefore

\[ \bar{x} - E \leq \mu \leq \bar{x} + E \]

\[ (83.75 - 11.201) \leq \mu \leq 83.75 + 11.201 \]

\[ 72.549 \leq \mu \leq 94.951 \]

\[ 72.55 \leq \mu \leq 94.95 \]

We are 90% sure that the mean price \( \mu \) is between \( \$72.55 \) and \( \$94.95 \)