Math 5411 – Mathematical Statistics I– Fall 2024
w/Nezamoddini-Kachouie

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Homework #11 – November 18, 2024

7.1.1 Find the number $z_{\alpha/2}$ needed in construction of a confidence interval:

when the level of confidence is 90%: we want to find the value for $z_{\alpha/2} = z_{0.05}$ from the table we have $z_{0.05} = 1.64$

when the level of confidence is 99%: we want to find teh value fo $z_{\alpha/2} = z_{0.005}$ from the table we have $z_{0.005} = 2.57$.

7.1.3 For confidence level 98%, $\alpha = 0.02$,$z_{\alpha/2} = z_{0.01} = 2.326$. $E = z_{\alpha/2}\frac{s}{\sqrt{n}} = 2.326\frac{14}{\sqrt{49}} = 4.652$ Thus, $\bar{x} \pm E = 35 \pm 4.652$.

7.1.4 For confidence level 90%, $\alpha = 0.10$,$z_{\alpha/2} = z_{0.05} = 1.65$. $E = z_{\alpha/2}\frac{s}{\sqrt{n}} = 1.645\frac{0.51}{\sqrt{120}} = 0.766$ Thus, $\bar{x} \pm E = 2.71 \pm 0.766$.