MATH 116: Elementary Statistics

The Normal Model on the TI (modified from Max Buot)

On p. 147, the text briefly mentions the TI commands describe in this handout.

normalcdf Command

To find what percent of a Normal model lies between two $z$-scores, choose normalcdf from the DISTR menu (to get this menu, press 2ND VARS) and enter the command normalcdf($z_{\text{Left}}, z_{\text{Right}}$), where $z_{\text{Left}}$ and $z_{\text{Right}}$ are the lower and upper $z$-scores, respectively.

**EXAMPLE 1:**
Suppose we have a variable $X$ that has a normal model with $\mu = 9.34$ and $\sigma = 1.55$. What would the sketch look like? To find $P(9.5 < X < 11.5)$, which is the probability that $X$ is between 9.5 and 11.5, we need to compute the lower and upper $z$-scores:

- lower $z$-score $= \frac{9.5 - 9.34}{1.55} = 0.103$
- upper $z$-score $= \frac{11.5 - 9.34}{1.55} = 1.394$

Entering the command normalcdf(0.103, 1.394) in the TI calculator, we find that $P(0.103 < Z < 1.394) = 0.377$. Hence:

$P(9.5 < X < 11.5) = 0.377$

We can also enter normalcdf(leftbound, rightbound, $\mu$, $\sigma$) rather than computing the $z$-scores.

invNorm Command

To find the $z$-score that corresponds to a given percentile in a Normal model, choose invNorm from the DISTR menu and enter the command invNorm(percentile).

**EXAMPLE 2:**
Suppose we have a variable $X$ that has a normal model with $\mu = 9.34$ and $\sigma = 1.55$. To find the 90th percentile, we first use the command invNorm(0.90)

To find that the $z$-score corresponding to the 90th percentile is 1.281. We then use the formula for the $z$-score:

$1.281 = \frac{(90\text{th percentile}) - \mu}{\sigma} = \frac{(90\text{th percentile}) - 9.34}{1.55}$

By simple algebra, we find that the 90th percentile is 11.3256. We can also use the command invNorm(percentage, $\mu$, $\sigma$) to compute the percentile without the need for a $z$-score conversion.