Notes – (1) To obtain the pictures that you see below, I used the link [http://psych.colorado.edu/%7Emcclella/java/normal/accurateNormal.html](http://psych.colorado.edu/%7Emcclella/java/normal/accurateNormal.html)
(2) Since I couldn’t enter $-\infty$ or $+\infty$ I replaced these entries with -5 or +5 as extremes

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#1a. \[ \Pr ( Z < 2.85 ) = .9978 \]

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#1b. \[ \Pr ( Z > 2.85 ) = .0022 \]
#1c.
Pr ( \( Z > -1.66 \) ) = Pr (\( Z < +1.66 \))
= .9515

#1d.
Pr ( \(-1.66 < Z < 2.85 \))
= Pr (\( Z < 2.85 \)) - Pr (\( Z < -1.66 \))
= Pr (\( Z < 2.85 \)) - Pr (\( Z > +1.66 \))
= Pr (\( Z < 2.85 \)) - \{ 1 - Pr (\( Z < 1.66 \)) \}
= Pr (\( Z < 2.85 \)) - 1 + Pr (\( Z < 1.66 \))
= .9978 - 1 + .9515
= .9493 which is pretty close to the applet solution on the web
#1e. \[ Pr \left( Z < -2.25 \right) \]
\[ = Pr \left( Z > +2.25 \right) \]
\[ = 0.0122 \]

#1f. \[ Pr \left( Z > -2.25 \right) \]
\[ = Pr \left( Z < +2.25 \right) \]
\[ = 0.9878 \]
#1g. \( \Pr ( Z > 1.77 ) = .0384 \)

#1h. \[ \Pr (-2.25 < Z < 1.77) = \Pr ( Z < 1.77) - \Pr ( Z < -2.25) = \Pr ( Z < 1.77) - \Pr ( Z > +2.25) = .9616 - .0122 = .9494 \]
#2a.

\[
\text{pr}(X < 67) = \text{pr}\left[\frac{X-\mu}{\sigma} < \frac{67-\mu}{\sigma}\right]
\]

\[
= \text{pr}[Z < \left(\frac{67-65.5}{2.5}\right)]
\]

\[
= \text{pr}[Z < .6]
\]

\[
= .7257
\]

#2b.

\[
\text{pr}(64 < X < 67) = \text{pr}\left[\frac{64-65.5}{2.5} < Z < \frac{67-65.5}{2.5}\right]
\]

\[
= \text{pr}[-6 < Z < +.6]
\]

\[
= .4515
\]