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Exercise: Using the normal tables

(3/3 points)

Let X be a normal random variable with mean 4 and variance 9. Use the normal table to find the following probabilities, to an accuracy of 4 decimal places.

a) $\mathbf{P}(X \leq 5.2) =$ 0.6554217 ✔ **Answer:** 0.6554

b) $\mathbf{P}(X \geq 2.8) =$ 0.6554217 ✔ **Answer:** 0.6554

c) $\mathbf{P}(X \leq 2.2) =$ 0.2742531 ✔ **Answer:** 0.2743

Answer:

a) Note that the standard deviation is 3. Subtracting the mean and dividing by the standard deviation, we obtain

$$\mathbf{P}(X \leq 5.2) = \mathbf{P}\left(\frac{X-4}{3} \leq \frac{5.2-4}{3}\right) = \Phi(0.4) = 0.6554.$$

b) Because of the symmetry around the mean,

$$\mathbf{P}(X \geq 2.8) = \mathbf{P}(X \leq 5.2) = 0.6554.$$

c)

$$\mathbf{P}(X \leq 2.2) = \mathbf{P}\left(\frac{X-4}{3} \leq \frac{2.2-4}{3}\right) = \Phi(-0.6) = 1 - \Phi(0.6) = 1 - 0.7257 = 0$$

You have used 1 of 2 submissions