

The Normal Distribution

The Complement Rule

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The Complement Rule

- The *Complement Rule* is a very simple rule for working with probability distributions.
- In this presentation, we will look at the Complement Rule for continuous probability distributions only.

The Complement Rule

- Remember, for continuous probability distributions, the probability of an **exact** value is extremely small, such that it is almost zero.

$$P(X = k) \approx 0$$

- Therefore we neglect the equality components in expressions such as $P(X \leq k)$ and $P(X \geq k)$.
- In fact we can treat these two expressions as *complementary events*.

The Complement Rule

$$P(X \leq k) = 1 - P(X \geq k)$$

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Event	Prob.	Complement Event	Prob.
$P(X \leq 100)$	0.65	$P(X \geq 100)$	
$P(Y \geq 80)$	0.40	$P(8 \leq 80)$	

The Complement Rule

- To compute the probability of the complementary event, simply subtract the probability of the event from 1.

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