Normal Random Variables

5.2 Probability Using the Normal Distribution

1. In 2010, the Bureau of Labor Statistics in the United States completed a time-use survey. The survey revealed that the average American watches 2.7 hours of TV per day. The standard deviation is 1.3 hours per day. Assume the amount of TV watched per day is normally distributed, and find the probability that a randomly selected American watches more than four hours of TV per day.

2. Scores for the SAT exam are normally distributed. According to the College Board, the average SAT score is 1518 and the standard deviation is 325. If one student's SAT score is randomly selected, what is the probability that the score is between 1400 and 1700. VS

3. Humans enjoy imagining future pleasurable experiences, so much so, that they will often delay satisfaction of a desire in order to increase the overall pleasure derived from the experience by allowing time to imagine it. In a very interesting study, volunteers were told they won a free dinner at a great French restaurant. The participants were then asked when they would like to make their reservation. They were told they could dine that evening or any date in the near future. The average participant chose a date 7 days in advance with a standard deviation of 3.25 days. Assuming the time until reservation is normally distributed, find the probability that a person would choose a time between two and four days from the date they were told about the prize.

Answers:

1. P(X > 4) = P(Z > 1.00) = 0.1587

2. P(1400 < X < 1700) = P(-0.36 < Z < 0.56) = 0.3529

3. P(2 < X < 4) = P(-1.54 < Z < -0.92) = 0.1170