1. .
2. .
   1. .
   2. .
   3. .
3. The probability that Alice and Bob will arrive within 20 minutes of each other is around 0.31. I came to this conclusion by running a Monte Carlo simulation 100,000 times in the context of the given problem.   
   The code I developed to run the simulation can be understood with this pseudocode: generate two random values that represented a time between 1 minutes to 2 hours arrival time, 100,000 times. Then, subtract these two values from each other and take the absolute value. If the subtracted value is less than or equal to 20 minutes, increment a counter by 1. After the loop is over, divided the counter by 100,000 and print the results.  
   The outputs always ranged extremely close to 0.31, so I assumed that the probability would tend towards this value with an even larger sample size.
4. To answer this question, I first compared total career passer ratings for both players during the regular season and post season. I also compared their career win percentages for both the regular season and the post season. Lastly, I compared their career adjusted net yards per pass attempt for both the regular and post seasons.  
   I used passer rating as a benchmark because it is one of the most widely used statistical figures in the NFL to measure and rate quarterbacks. However, it does receive criticism that it only measures the quality of the passer, not the quality of the quarterback as a whole, nor the quality of his receivers. Profootball Reference created the statistic adjusted net yards per pass attempt to try to counterbalance the criticism. It takes into account passing yards, passing attempts, sacks, interceptions, and touchdowns to try to create a statistic that accurately measures the quarterback’s performance as a whole.   
   Both players have essentially the same number of regular seasons and post seasons in their respective careers as well, so the argument that one had more data than the other is basically irrelevant. The only argument I can think of is that they played in different eras, so it may be hard to compare some aspects of their careers. For example, for the years Ben Roethlisberger has been playing, the NFL has become more of a “pass first, rush second” type of league, whereas in Terry Bradshaw’s time, games were often fought with strong rushing attacks and physical defenses.   
   With this information in mind, here are my findings:

|  |  |  |
| --- | --- | --- |
| Statistic | Ben Roethlisberger | Terry Bradshaw |
| Regular season passer rate | **94.0** | 70.9 |
| Post season passer rate | **86.5** | 83.0 |
| Regular ANY/A | **6.70** | 4.77 |
| Post season ANY/A | 6.09 | **7.16** |
| Regular season win % | **68.2** | 67.7 |
| Post season win % | 61.9 | **73.7** |

Based on this table, Ben Roethlisberger is a better quarterback than Terry Bradshaw.