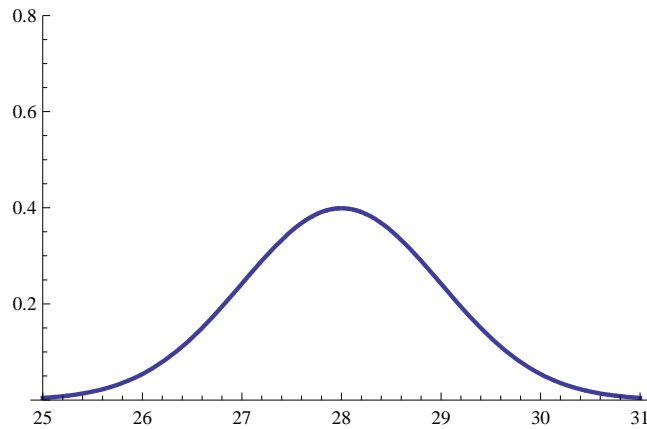


Homework Solutions

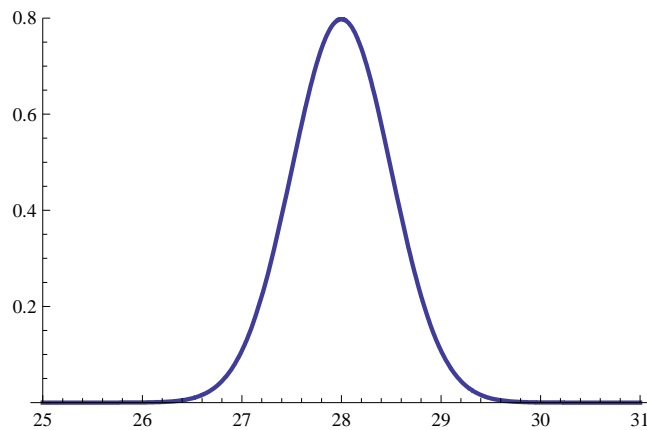
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Exercise 22

- (a) The average mpg for 4 fill-ups has a normal distribution with mean 28 and standard deviation $\frac{2}{\sqrt{4}} = 1$ (assuming that the sticker is correct). Here is the sketch.



- (b) (i) Use the mean plus or minus 1 standard deviation and get “between 27 and 29.”
(ii) Use the mean plus or minus 2 standard deviations and get “between 26 and 30.”
(iii) Use the mean plus or minus 3 standard deviations and get “between 25 and 31.”
- (c) For samples of size $n = 16$, the standard deviation is $\frac{2}{\sqrt{16}} = 0.5$. Here is the sketch.



- (i) It is narrower. In fact, it is exactly twice as narrow (half as wide).
(ii) They will be half as wide.

(d) No. 26 mpg is 4 standard deviations below average, which would be extremely unusual.