A cellphone company determines that the amount of cellular data used in a month by their network users has an approximate Normal distribution with mean = 825 MB and standard deviation = 225 MB.

**Note**: *You must show the details of the work to receive credit. In particular, in questions 2 through 4, you must show the standardized value, the value obtained from the standard normal table, and the final computation (or possibly in the reverse order). Simply providing the final answer from a calculator will get **ZERO** points.*

1. (3 points) Using the 68–95–99.7 rule, complete the following sentence (show the work below):

"99.7% of the company's network users use monthly data between __150__ MB and _1500_ MB."

   *99.7% of the data is within 3 standard deviations of the mean. Note that $825 - 3 \cdot 150 = $ and $825 + 3 \cdot 225 = 1500$.*

2. (4 points) The company classifies their users with more than 1240 MB monthly data usage as "Heavy Data Users." What percentage of the network users are "Heavy Data Users"?

$$z_{1240} = \frac{1240 - 825}{225} = \frac{415}{225} = 1.84 \rightsquigarrow 0.9671$$

*Therefore, $1 - 0.9671 = 0.0329 = 3.29\%$ of users are heavy data users.*

3. (4 points) "Medium Users" were classified by the company as those that use between 460 MB and 1180 MB data in a month. What percentage of the network users are "Medium Users"?

$$z_{1180} = \frac{1180 - 825}{225} = \frac{955}{225} = 1.58 \rightsquigarrow 0.9429$$
$$z_{460} = \frac{460 - 825}{225} = \frac{}{225} = -1.62 \rightsquigarrow 0.0526$$

*Therefore, $0.9429 - 0.0526 = 0.8903 = 89.03\%$ of users are medium users.*

4. (4 points) Find the top ten percentile of the monthly data usage by the company's network users. [Note that the top ten percentile is the value such that 10% of users have monthly data usage above that value and 90% of users have monthly data usage below that value.]

   *top $10\% \rightsquigarrow$ bottom $90\% \rightsquigarrow 1.28 = z$. Then*

$$1.28 = z = \frac{x - 825}{225}$$

*Then $288 = x - 825$ so that $x = 1113$. The top 10% of users use 1113 MB or more data per month.*