

9.2-9.4 The Normal Distribution Cont'd

Ex: A variable is normally distributed with $\mu = 30$ mins and $\sigma = 10$ mins. Find the probability that:

a) see yesterday's notes

b) the variable is less than 25 mins

(online calculator) 0.3085 or 30.85%

c) the variable is between 40 and 50 mins

0.1359 or 13.59%

d) the variable is exactly 40 mins.
0

Ex: a) A data set is normally distributed with a mean of 0 and a standard deviation of 1. Confirm the Empirical Rule by finding the probability that

$$\mu - \sigma \leq x \leq \mu + \sigma$$

↑
a measurement

The interval is $-1 \leq x \leq 1$
Use online calculator
0.68 or 68%

b) Find the probability that
 $\mu - 2\sigma \leq x \leq \mu + 2\sigma$

$$-2 \leq x \leq 2$$

0.95 or 95%

c) Same but $\mu - 3\sigma \leq x \leq \mu + 3\sigma$

$$-3 \leq x \leq 3$$

0.997 or 99.7%

Notation:

$$\mu - k\sigma \leq x \leq \mu + k\sigma$$

"within k standard deviations of the mean"

