Starter 2/11

p. 441 #43-46

$\sqrt{2}\sigma = \sqrt{\frac{p(1-p)}{\frac{n}{2}}\frac{2}{n}} = \sqrt{\frac{p(1-p)}{n}2}$

7.3a Sample Means

Taking means = smaller spread (less variability)

center: The mean of a sampling distribution of $\bar{x}$ is: $\mu_{\bar{x}} = \mu$

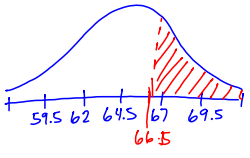
spread: The standard deviation of the sampling distribution of $\bar{x}$ is: $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$ (only when n is less than 10% of our population)

* larger samples = smaller spread

shape: If the population is Normal, then the sampling distribution of $\bar{x}$ will be Normal

Ex: The heights of U.S. women follow a Normal distribution with a mean of 64.5 inches (μ) and a standard deviation of 2.5 inches (σ).

a) Find the probability that a randomly selected woman is taller than 66.5 inches.



normalcdf(66.5, 10000, 64.5, 2.5)
(lower bnd, upper bnd, μ, σ)

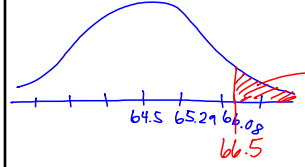
= 0.212

b) Find the probability that the mean height of an SRS of 10 women is larger than 66.5 inches.

$\mu_{\bar{x}} = 64.5$

$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = \frac{2.5}{\sqrt{10}} = .79$

There are more than 100 women in the U.S. So the 10% condition is met.



0.005