Pre-Class Problems

19 November 2009

Section 4.3

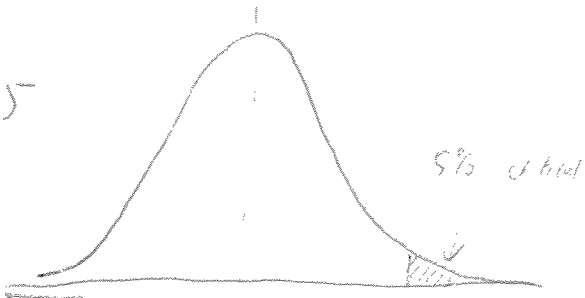
2. a. $Z = \dfrac{\bar{x} - \mu_0}{\sigma/\sqrt{n}} \geq 1.645$

$\bar{x}$ ← sample mean

we can reject at $\alpha = 0.1$

$\bar{x}$ is test statistic

@ $\dfrac{\bar{x} - 170}{10/\sqrt{25}} \geq 1.645$



critical $= \mu + 2.05 \cdot \frac{\sigma}{\sqrt{n}} = 170 + 1.645 \cdot \frac{10}{5} = \boxed{173.2}$

b. Sample mean $= 172.52 = \bar{x}$

$\dfrac{\bar{x} - 170}{10/\sqrt{25}} = 1.26$

1.26 is less than 1.645, so fail to reject alternative hypothesis

4. $z\text{-value} = \dfrac{\bar{x} - \mu_0}{\sigma/\sqrt{n}}$

$= \dfrac{510.77 - 530}{90/6} = -1.282$

$P(Z < -1.282) = \boxed{0.10}$

10% significance

6. a. $\bar{X}_{sample} = 667.92$

$\bar{X}_{sample} < \bar{X}_{critical}$, so we can reject H_0
(668.94)

b. $Z_{crit} = \dfrac{\bar{X}_{critical} - \mu}{\sigma/\sqrt{n}} = \dfrac{668.94 - 715}{140/\sqrt{25}}$

$= -1.645$

This is a 95% significant test,
$\alpha = 0.05$.