113 Review Answers

1. $\hat{p} = \frac{512}{1000}$ The CI is $\hat{p} \pm 1.96\, SE(\hat{p})$

So $.512 \pm 1.96 \times \sqrt{\frac{.512(1-.512)}{1000}}$

$= .512 \pm 1.96 \times .0158$

$= .512 \pm .0309$

Does include $p = .5$.

2. Data

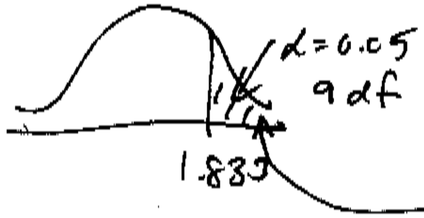
n	$\bar{x}$	s
10	2.40	0.08

a) $H_0: \mu = 2.35$ $\quad H_A: \mu > 2.35$

b) $T = \frac{\bar{x} - \mu}{s/\sqrt{n}}$; $n - 1 = 9$ d.f

c) $T\text{-obs} = (2.40 - 2.35)/(0.08/\sqrt{10}) = 1.976$

d) c.v.



e) We REJECT. The difference is stat. significant if $\alpha = 0.05$.

3: a) H_0: $\mu = 12$ $\quad$ H_0: $\mu \neq 12$

<u>Data</u>

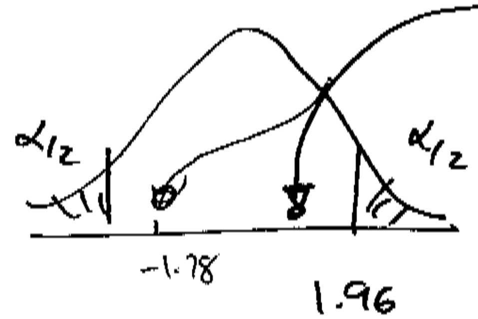
n	$\overline{X}$	σ
5	11.2	1.

NOT s!

b)
use $Z = \dfrac{x-\mu}{\sigma/\sqrt{n}}$ w/ ∞ d.f. (Normal)

c) observed $= \dfrac{11.2-12}{1/\sqrt{5}} = -.8 \times \sqrt{5} = -1.78$

d) c.v. Two sided



we ACCEPT; The difference is not statistically significant.

4. ① H_0: $\mu_1 = \mu_2$ $\quad$ H_A: $\mu_1 < \mu_2$ $\quad$ μ_1 = mean of population who, taken aspirin, would have.

② $\boxed{\text{Assume } \sigma_1 = \sigma_2}$; small n_1, n_2

$$T = \frac{\overline{X_1} - \overline{X_2}}{s_p\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$ $\quad$ df: $n_1 + n_2 - 2 = 30$

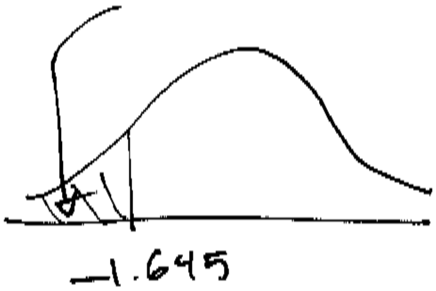
3. <u>observed</u>

$$S_p = \sqrt{\frac{13 \cdot 3^2 + 17 \cdot 2.5^2}{30}} = 2.72 \quad \left(\begin{array}{c}\text{between}\\ 2.5 \text{ \& } 3\end{array}\right)$$

$$T: \frac{5-7}{2.72\sqrt{\frac{1}{14}+\frac{1}{18}}} = -2.06.$$

$df = 30$ use ∞.

4. critical value.



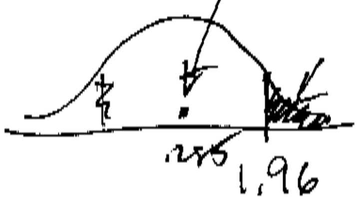
we REJECT at the $\alpha = 0.05$ level.

#5 $H_0: \mu_1 = \mu_2 \quad H_A: \mu_1 > \mu_2.$

b) use $T = \dfrac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$ as n_1, n_2 are large

c) <u>observed</u> $\dfrac{4.5 - 4.2}{\sqrt{\frac{3.5^2}{45} + \frac{5.0^2}{30}}} = .285$

d) critical value



$\boxed{\text{we ACCEPT}}$