Ans-15

1) 1. $H_0: \mu = 25$, $H_1: \mu \neq 25$

-> yes, with mean alone we can do & it contains

2. not possible,

3. possible its sample mean.

4. not possible

5 not possible

2) $\mu = 52$

$\sigma = 4.50$

$n = 100$

$\bar{x} = 52.80$

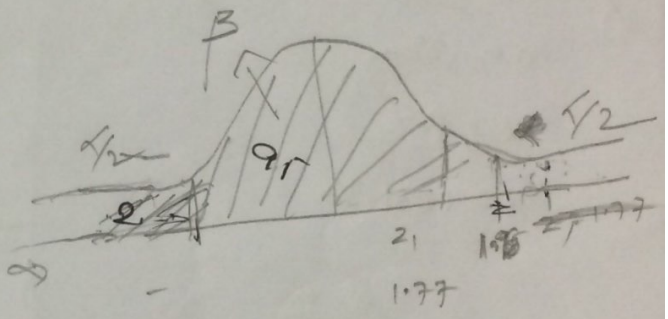
$\alpha = 5\%$

$\mu = 52$

$\mu \neq 52$

95 : 1.96

95%:



$= \frac{\bar{x} - \mu}{\sigma/\sqrt{n}}$

$= \frac{52.8 - 52}{4.56/\sqrt{100}}$

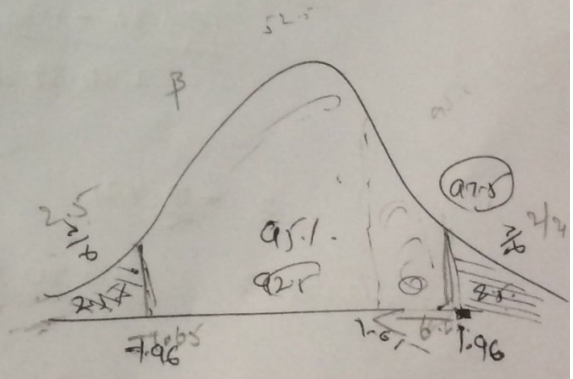
$= \frac{0.8}{4.56/10}$

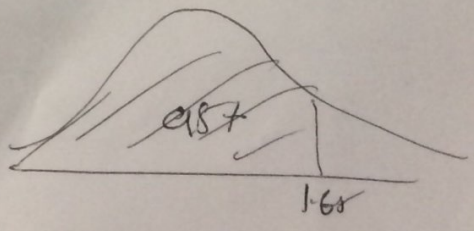
$= \frac{0.8}{0.45}$

$z_1 = 1.77$

=

So W





z. vale is lieing between the 95%

mean it is falling on significance area so, we are to

Reject the Null hypothesis

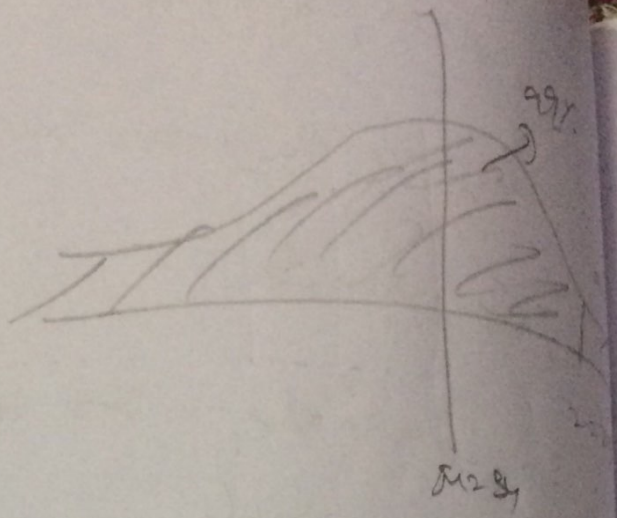
Scanned with CamScanner

3) $\mu = 34$

$\sigma = 8$

$H_0 < 34$

$H_1 \geq 34$



$n = 50$

$\bar{x} = 32.5$

$$z = \frac{32.5 - 34}{8/\sqrt{50}}$$

$= -1.3$

$= 0.906$

z value = $\underline{\quad\quad}$

conclusion = Fail to Reject

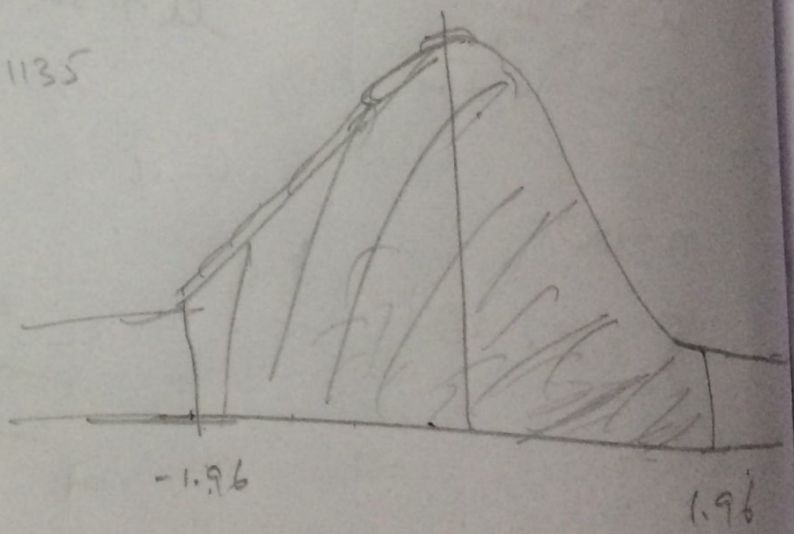
4) $\mu = 1135$

$H_0 : \mu = 1135$

$n = 22$

$\alpha = 0.5$

$\bar{x} = 1031.32$



$$z = \frac{\bar{x} - \mu}{\sigma/\sqrt{n}}$$

$$= \frac{1031.32 - 1135}{240.3746/\sqrt{22}}$$

$= -2.02$

conclusion = We ~~Reject~~ the null hypothesis

5) $\mu = 48,432.$

$n = 400$

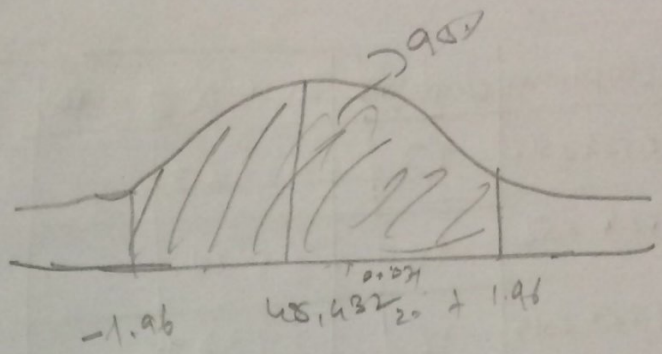
$\bar{x} = 48,574$

$\sigma = 2000$

$$= \frac{48,574 - 48,432}{2000}$$

$$= \frac{142}{(2000/\sqrt{400})}$$

$Z = 1.42$



$H_0 = \mu = 48,432$

$H_a = \mu \neq 48,432$

=> fail to reject null hypothesis

6) $\mu = 32.28$

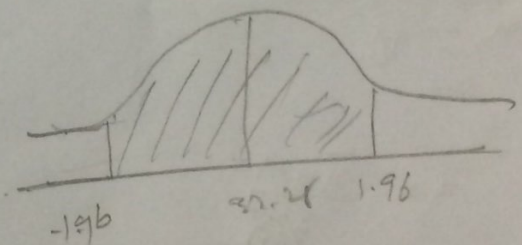
$\bar{x} = 31.67$

$\sigma = 1.29$

$n = 19$

$H_0 = \mu = 32.28$

$H_1 = \mu \neq 32.28$



$$z = \frac{31.67 - 32.28}{1.29/\sqrt{19}}$$

$= -2.1$

Ending: We reject the null hypothesis

7) $\sigma_1 = 2.5$

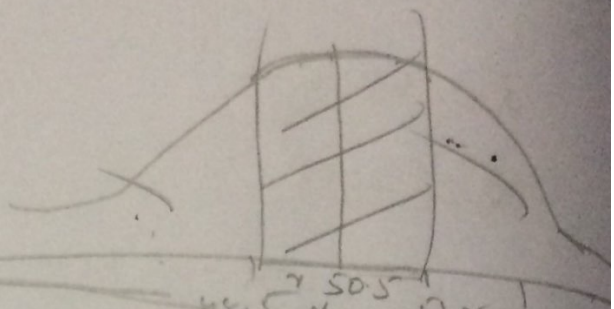
$\sigma_2/\sqrt{n} = 0.79$

$\sigma_3/\sqrt{n} = 0.62$

$\mu_1 = 50$

$\mu_2 = 52$

$\mu_3 = 50.5$



Acceptance	sample size	α @ $\mu=50$	β at $\mu=52$	β @ $\mu=50.5$
$48.5 < \bar{x} < 51.5$	10	5.7%	26.43%	89.05%
$48 < \bar{x} < 52$	10	1.1%	50%	97.05%
$48.5 < \bar{x} < 51.5$	16	2.9%	43.64%	98.40%
$48.425 < \bar{x} < 51.50$	16	1.6%	25.14%	95.79%

8) $\mu = 10$,

$\bar{x} = 12$

$s = 1.5$

$n = 16$.

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

$$= \frac{12 - 10}{1.5/16}$$

$$= 2/1.5/4$$

$$= 2/0.375$$

$$\sim 5.33$$

9) $n = 16$

$1 - \alpha = 0.99$

$\Rightarrow \alpha = 0.01$

~~$= n-1$~~

~~$= 16-1$~~

~~$= 15$~~

degree of freedom

$= n - 1$

$= 16 - 1$

$= 15$

$t_{0.01}$

at 15 $\Rightarrow$ 2.602

Scanned with CamScanner

10) $n = 25$

$\mu = 60$

$\bar{x} = 64$, ~~$\alpha = 0.95$~~ $\alpha = 0.05$

degree of freedom = $n-1$

$= 25-1$

$= 24$

$P(-t_{0.05} < t < t_{0.10})$

$\Rightarrow -1.34 + 1.711$

$\Rightarrow 0.393$

11) $\mu = 50$

$H_0 = \mu = 50$,

$H_1 = \mu < 50$

$\alpha = 0.5$

$\bar{x} = 48.7$

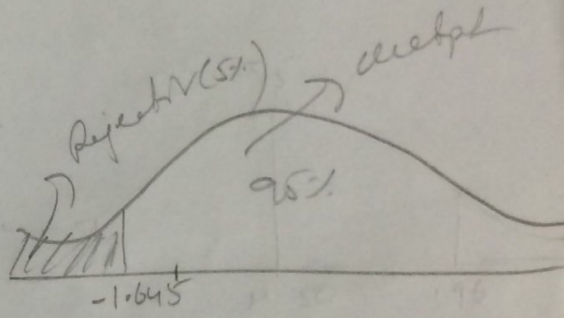
$\sigma = 4.45$

$n = 10$

$= \frac{48.7 - 50}{4.45/\sqrt{10}}$,

$= \frac{-1.3}{4.45\sqrt{10}}$

$= -0.92$



$\Rightarrow$ fail to Reject.

12) $\bar{x} = 320$

$\mu = 300$, $\alpha = 0.05$

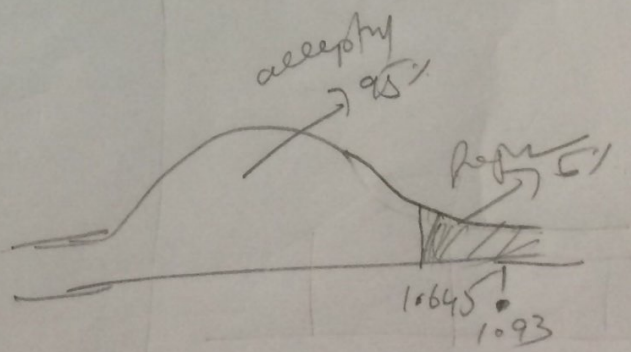
$\sigma = 41.2$, $n = 16$

$= \frac{320 - 300}{41.2/\sqrt{16}}$

$= \frac{20}{41.2/\sqrt{16}}$

$= 1.93$

$t = 1.93$



$\therefore$ we Reject null hypothesis.

Scanned with CamScanner