

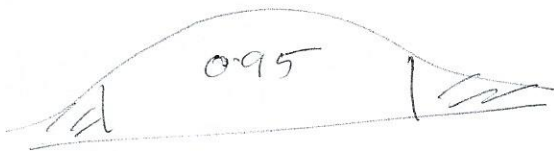
08/02/2019

t-distributed
 σ is unknown

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

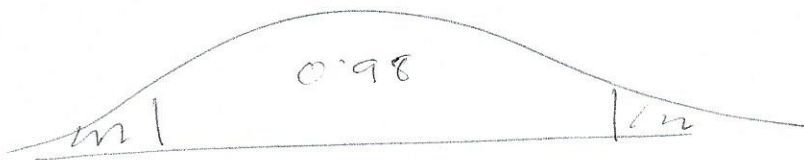
degree of freedom $d.f = n - 1$

a) $d.f = 12 - 1 = 11$



$$\text{tails} = \frac{1 - 0.95}{2} = 0.025$$

b) $d.f = 20 - 1 = 19$

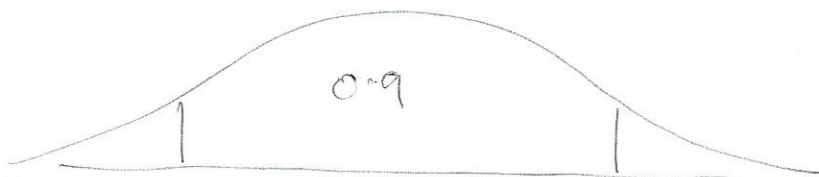


$$\text{tails} = \frac{1 - 0.98}{2} = 0.01$$

c)

2/2

$$c) \quad d.f = 22 - 1 = 21$$



$$\text{tails} = \frac{1 - 0.9}{2} = 0.05$$

$$t_{\alpha/2} = 1.721$$

Ex 4

$$1. \quad n = 7$$

$$\bar{y} = 75.00$$

$$s = 12.50$$

$$2. \quad d.f = 7 - 1 = 6$$

$$3. \quad c = 0.95$$

$$t_{\alpha/2} = 2.447$$

$$\frac{1 - 0.95}{2} = 0.025$$

$$E = 2.447 \times \frac{12.5}{\sqrt{7}}$$

Max error of estimate $E \approx 11$.

For Confidence Interval:
Don't round until final answer.

$$75 - 2.447 * \frac{12.5}{7} < \mu < 75 + 2.447 * \frac{12.5}{\sqrt{7}}$$

$$63.44 < \mu < 86.56$$

$$(63.44, 86.56)$$

5. With 95% confidence we believe that all computer repair costs should fall between \$63.44 & \$86.56.

~~6.8.~~

1. $n = 20$

$\bar{x} = 21.6$

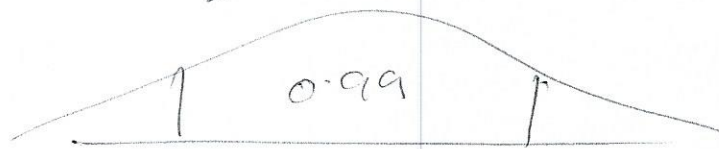
$s = 2.96$

2. $df = 19$

3. $c = 0.99$

$t_{c/2} = 2.861$

$$\frac{1 - 0.99}{2} = 0.005$$



4. $21.6 - 2.861 * \frac{2.96}{\sqrt{20}} < \mu < 21.6 + 2.861 * \frac{2.96}{\sqrt{20}}$

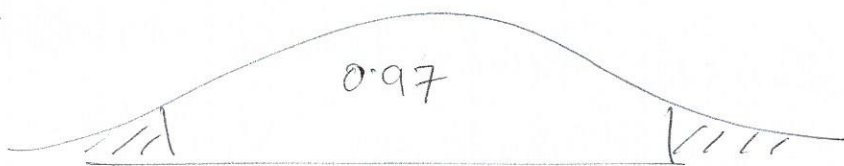
$$19.7 < \mu < 23.5$$

$$(19.7, 23.5)$$

ANSWER

With 99% confidence we believe that average test scores of all students should fall between 20 to 24 points.

Ex 2



$$\text{tails} = \frac{1 - 0.97}{2} = 0.015$$

$$z_{\alpha/2} = 2.17$$

Estimating means

z-dist

σ is known

The max margin of error

$$E = z_{\alpha/2} * \frac{\sigma}{\sqrt{n}}$$

$$1. \quad n = 36$$

$$\bar{x} = 12.53$$

$$s = 2.10$$

2. σ is known

$$c = 0.9$$

$$z_{\alpha/2} = 1.645$$

$$E = 1.645 * \frac{2.1}{\sqrt{36}}$$

$$12.53 - 1.645 * \frac{2.1}{\sqrt{36}} < \mu <$$

$$12.53 + 1.645 * \frac{2.1}{\sqrt{36}}$$

$$11.95 < \mu < 13.11$$

$$(11.95, 13.11)$$

$$c = 0.95$$

$$z_{\alpha/2} = 1.96$$

$$E = 1.96 * \frac{2.1}{\sqrt{36}}$$

$$12.53 - 1.96 * \frac{2.1}{\sqrt{36}} < \mu < 12.53 + 1.96 * \frac{2.1}{\sqrt{36}}$$

$$(11.84 < \mu < 13.22)$$

$$(11.84, 13.22)$$

ANSWER

with 95% confidence we believe that the ^{average} closing stock prices for this should be between \$11.84 to \$13.22.

$$C = 0.95$$

$$z_{\alpha/2} = 1.96$$

$$b = 6.6$$

$$E = 0.5$$

$$n = \left(\frac{1.96 \times 6.6}{0.5} \right)^2$$

We need 670 teen is the study to be 95%.

Confidence within $\frac{1}{2}$ hour.