14.1206

(53) X is wt of a tablet of aspirin

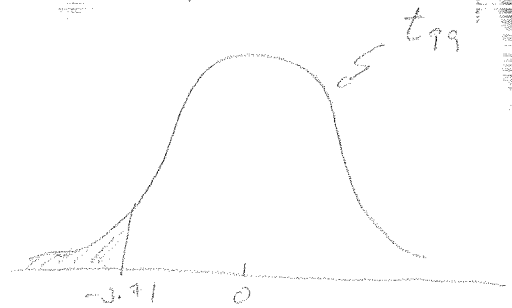
$H_0: \mu_x = 5$

$H_a: \mu_x < 5$

$\bar{x} = 4.87$

$s = 0.35$

$n = 100$



$$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}} = \frac{4.87 - 5}{.35/\sqrt{100}} = -3.7143$$

$$\text{p-value} = \int_{-\infty}^{-3.7143} f(x)\,dx = 0.000168622$$

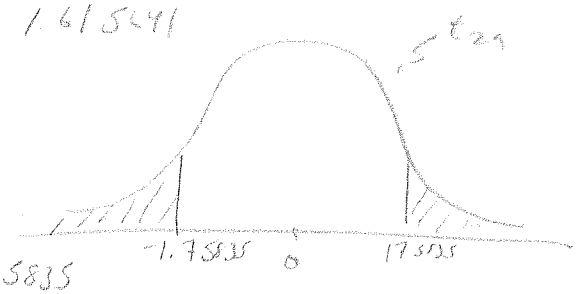
$\therefore$ There is significant evidence to conclude that the manufacturer is packing aspirin with an average wt of less than 5 grams per tablet

(56) X = amount of organic matter (%) in soil specimen

$\bar{x} = 2.48133$ $s = 1.615641$

$H_0: \mu_x = 3$

$H_a: \mu_x \neq 3$



$$t = \frac{2.48133 - 3}{1.615641/\sqrt{30}} = -1.75835$$

$$\text{p-value} = 2\int_{1.75835}^{\infty} f(x)\,dx = 0.0892358$$

$\therefore$ This is marginal evidence that μ is $\neq 3$. Therefore we are unable to conclude that $\mu \neq 3$.

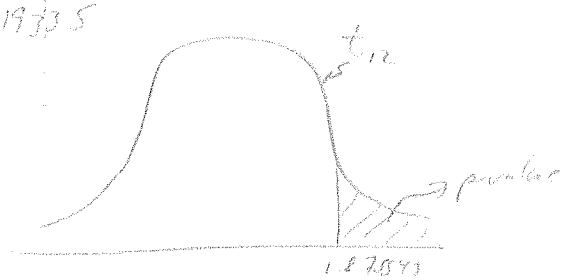
(57) $X \sim$ time (sec) for 1st sprinkle activation

$n=13$

$\bar{x} = 27.92308$ $\quad s = 5.619335$

$H_0: \mu_x = 25$

$H_a: \mu_x > 25$



$$t = \frac{27.92308 - 25}{5.619335/\sqrt{13}} = 1.875543$$

$$\text{p-value} = \int_{1.875543}^{\infty} f(x)\,dx = 0.0426251$$

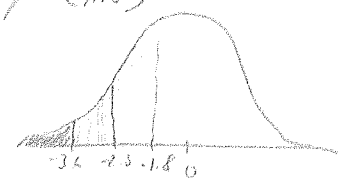
$\therefore$ There is significant evidence that the first sprinkle activation mean time is greater than 25 seconds

(58) $X \sim$ rating lifetime of a specific type it per (hrs)

a. $n = 18$

$H_0: \mu_x = 10$

(a) $\longrightarrow$ $H_a: \mu_x < 10$



b. if $t = -2.3$, p-value is $\int_{-\infty}^{-2.3} f(x)\,dx = 0.0171935$

$\therefore$ Significant evidence that $\mu_x < 10$

c. if $t = -1.8$, p-value is $\int_{-\infty}^{-1.8} f(x)\,dx = 0.0448161$

$\therefore$ Significant evidence that $\mu_x < 10$

d. if $t = -3.6$, p-value is $\int_{-\infty}^{-3.6} f(x)\,dx = 0.0011445$

$\therefore$ Significant evidence that $\mu_x < 10$