

$\bar{x}_1 = 14$ $s_1 = 1.2247$ $n_1 = 36$
 $\bar{x}_2 = 12.5$ $s_2 = 1.4142$ $n_2 = 72$

$H_0: \mu_1 = \mu_2$ $H_1: \mu_1 \neq \mu_2$

Pooled Variance $S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} = 1.83491$

Test Statistic: $t = \frac{\bar{x}_1 - \bar{x}_2 - (\mu_1 - \mu_2)}{S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = 5.42$

Degrees of freedom = $n_1 + n_2 - 2 = 106$

since test statistics lies in rejection region we reject H_0 and conclude that both are significantly different

At $\alpha = 0.01$, $n_1 = 36$, $n_2 = 72$

Reject H_0 if $t > 2.623$

or $t < -2.623$

As t_{test} is two tailed

Critical value:

$t_{n_1, n_2 - 2, \alpha/2} = t_{106, 0.005} = 2.623$

