

Section 8.4 Population Mean ($\sigma = \text{pop. std. dev.}$ is unknown)

Parameter: Population Mean

Hypotheses: The machine bottles 600 mL bottles.
 If this is wrong it needs adjustment.
 $H_0: \mu = 600 \text{ mL}$, $H_1: \mu \neq 600 \text{ mL}$

Gather: $n, \bar{x}, \text{std. dev } (\sigma \text{ or } s), \alpha$ 2-tail test

Data: 600.15, 599.92, 599.85, 599.92, 599.81,
 600.14, 600.04, 599.98

$\bar{x} = 599.98, s = 0.13, n = 8, \alpha = .05$
 $\sigma \text{ unknown}$

Requirements: $n > 30$ or pop. is normal.
NO yes ✓

Test Statistic: $t = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{599.98 - 600}{0.13/\sqrt{8}} = -0.44$
 $\mu \text{ from } H_0$ std. errors.

Critical Value(s):

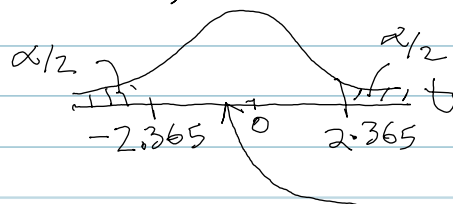
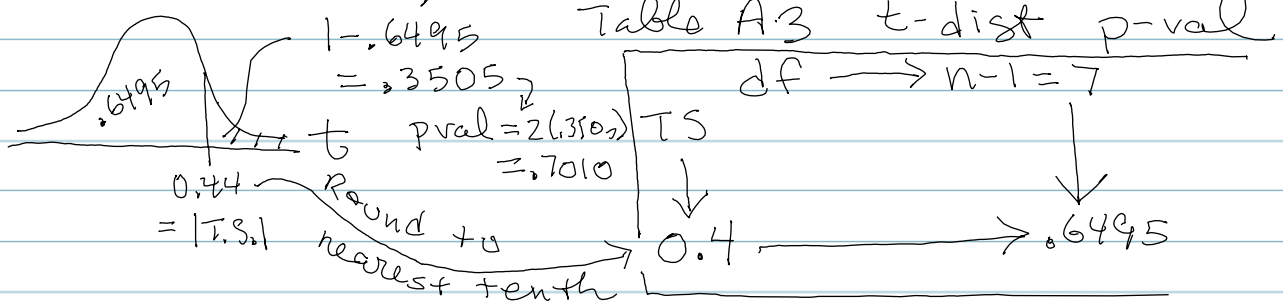


Table A7	$\alpha = .05$ 2-tail
$df = n - 1 = 7$	2.365

P-value: (2-tail test)



Conclusion: $p\text{-val} > \alpha$ so fail to reject H_0
 and don't support H_1 .

The data do not support the claim that the mean amount of soda is different from 600 mL.