Panel 1

Last Time:

Hypothesis testing about Mean

$H_0: \mu = \#$

$H_a: \mu \neq \#$

t_0 or $z_0 = \frac{\bar{x} - \mu}{(s/\sqrt{n})} = \#$

Large sample:
$p = 2P(z > |z_0|)$.
If p is small ($< .05$)
$\Rightarrow$ Reject H_0.

Answer: Reject H_0 (and accept H_a)
OR
Inconclusive

small sample: $df = n-1$, Book
Up t_α is t-table for $t_{.025}$

If $|t_0| > t_\alpha \Rightarrow$ Reject H_0.

Panel 2

4. The Cleveland Casting plant produces iron automotive castings for Ford When the process is stable, the target pouring temperature of the molten iron is 2,550 degrees. The pouring temperatures for a random sample of 10 crankshafts produces at the plant are listed below. Does the mean pouring temperature differ from the target setting?

2543, 2541, 2544, 2620, 2560, 2559, 2562, 2553, 2552, 2553

$n = 10$, $\Sigma x = 25587$, $\Sigma x^2 = 65\,474\,113$

$\bar{x} = 2558.7$ $s^2 = \frac{1}{9}\left(65\,474\,113 - \frac{25587^2}{10}\right) = 507.34$

$H_0: \mu = 2550$

$H_a: \mu \neq 2550$

$s = 22.34$

Inconclusive

$t_0 = \frac{\bar{x} - \mu}{(s/\sqrt{n})} = \frac{2558.7 - 2550}{\left(\frac{22.34}{\sqrt{10}}\right)} = \frac{8.7}{7.07} = 1.23$

If $|t_0| > 2.262$,
Reject H_0

column $t_{.025}$
Row: $df = 9$
$\Rightarrow t_\alpha = 2.262$

Private Freehand 2

Panel 3

5. According to USA Today (Dec. 1999) the average age of MSNBC TV News viewers is 50 years. A company wants to market a product for this age group, but wants to ensure that the USA Today study is correct before investing advertisement money. They select 50 US households at random that view MSNBC TV News and find their average age to be 51.3 years with a standard deviation of 7.1 years. Should the company invest in advertising?

$H_0: \mu = 50$

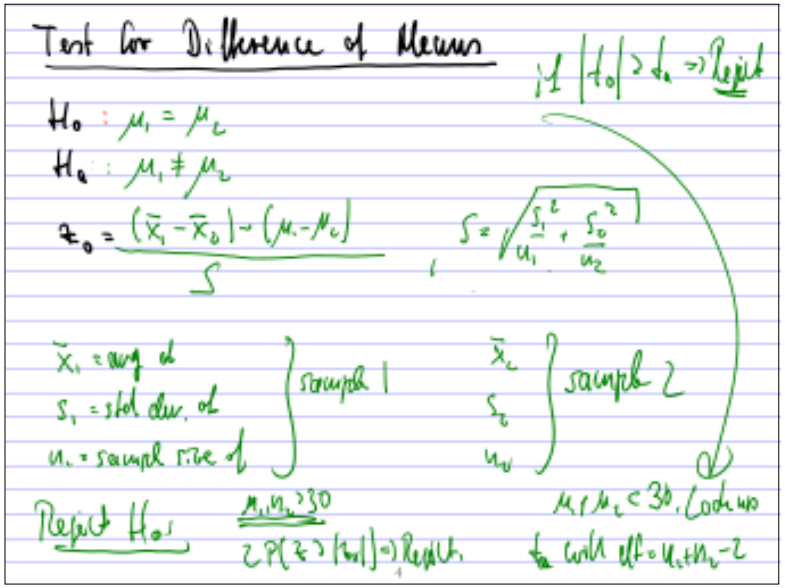
$H_a: \mu \neq 50$

Inconclusive

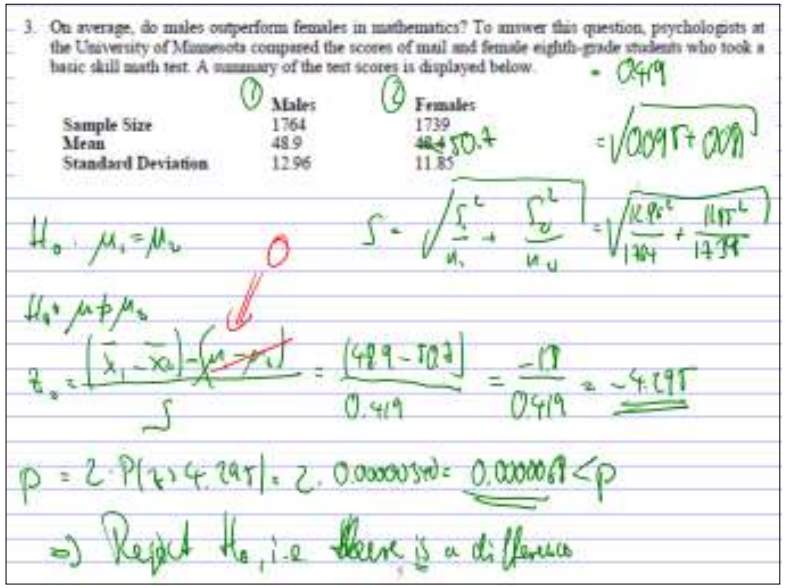
$t_0 = \frac{51.3 - 50}{\left(\frac{7.1}{\sqrt{50}}\right)} = \frac{1.3}{1.004} = 1.31$

$p = 2 \cdot P(t > |1.31|) = 2 \cdot .09051 = .1902 > .05$

Panel 4



Panel 5



Panel 6