that "the population is normally distributed or $n > 30$." The necessary requirements are satisfied. ✔

The t test results are shown in the accompanying screen displays. STATDISK and the TI-83/84 Plus calculator both provide a P-value of 0.0070 (rounded). SPSS provides only a two-tailed P-value of 0.014, so that value should be halved because this test is right-tailed. Using the rule that "if the P-value is low, the null must go," we reject the null hypothesis because the P-value of 0.0070 is less than the significance level of 0.05. We conclude that there is sufficient evidence to support the claim that men have a mean weight greater than the mean of 166.3 lb as was assumed by the National Transportation and Safety Board.

The use of technology makes the t test quite easy, but it is essential to understand the procedure along with the requirements and interpretations. Blind and thoughtless use of technology could easily lead to serious errors.

STATDISK

```
t Test
Test Statistic, t: 2.5747
Critical t:        1.6849
P-Value:           0.0070

90% Confidence interval:
172.0467 < μ < 193.8104
```

TI-83/84 PLUS

```
T-Test
 μ>166.3
 t=2.574655673
 p=.0069720329
 x̄=182.92856
 Sx=40.8475
 n=40
```

SPSS

	Test Value = 166.3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Weight	2.575	39	.014	16.62862	3.5650	29.6923

Part 2: Testing a Claim About a Population Mean When σ Is Known

In reality, it is very rare to test a claim about an unknown population mean while the population standard deviation is somehow known. For this case, the procedure is essentially the same as in Part 1 of this section, but the test statistic, P-value, and critical values are found as follows:

Test Statistic for Testing a Claim About a Mean (When σ Is Known)

$$z = \frac{\bar{x} - \mu_{\bar{x}}}{\frac{\sigma}{\sqrt{n}}}$$

P-Value

Provided by technology, or use the standard normal distribution (Table A-2) with the procedure summarized in Figure 8-4 from Section 8-2.

Critical Values

Use the standard normal distribution (Table A-2).