Exercise 12

(a) The hypotheses are

$$H_0 : \quad \mu = 16$$
$$H_1 : \quad \mu < 16$$

(b) Skip the QQ plot.

(c) We have already done Step 1. We will continue, starting with Step 2.

2. $\alpha = 0.10$.

3. We could use either z or t because the sample size is large. However, because we are using s instead of σ, it is better to use t. So the test statistic is $t = \dfrac{\bar{x} - \mu_0}{s/\sqrt{n}}$.

4. Enter the data into the TI-83 and use `1-Var-Stats` to get $\bar{x}$ and s. We get $\bar{x} = 15.845$ and $s = 1.3594$. $t = \frac{15.845 - 16.0}{1.3594\sqrt{56}} = -\frac{0.155}{0.1817} = -0.8533$.

5. p-value = `tcdf(-E99,-0.8533,55)` $= 0.1986$.

6. Accept H_0.

7. The average width percent is 16.