Exercise 17

(a) 1. Let μ be the average number of cavities among children in Detroit.

$$H_0: \quad \mu = 2.6$$
$$H_1: \quad \mu < 2.6$$

2. $\alpha = 0.05$.

3. The test statistic is $t = \dfrac{\overline{x} - \mu_0}{s/\sqrt{n}}$.

4. $t = \dfrac{1.5 - 2.6}{0.75/\sqrt{36}} = -\dfrac{1.1}{0.125} = -8.8$.

5. p-value = $\texttt{tcdf(-E99,-8.8,35)} = 1.0756 \times 10^{-10}$.

6. Reject H_0.

7. The average number of cavities among children in Detroit is less than 2.6.

(b) Yes, it would still be valid because the sample size is large (greater than 30).