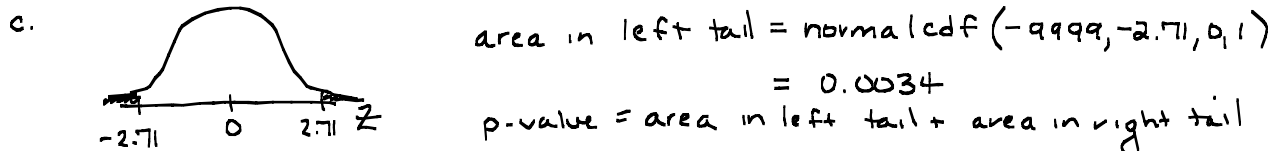


Statistics
Practice Test 4 Solutions

1. a. $H_0: p = 0.68$
 $H_a: p \neq 0.68$ (claim) two-tailed test

b. $\hat{p} = \frac{720}{1000} = 0.72$

$$z = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}} = \frac{0.72 - 0.68}{\sqrt{\frac{(0.68)(0.32)}{1000}}} = 2.71$$



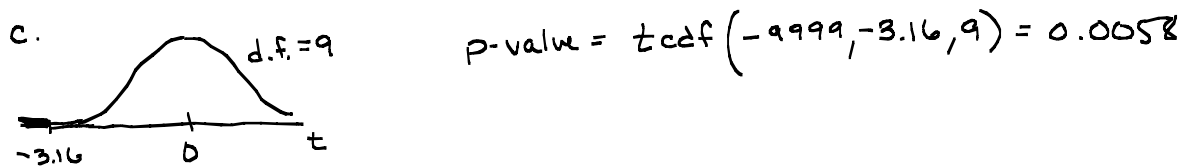
d. Reject H_0 since the p-value is less than α .

e. There is sufficient evidence to support the claim that the percentage of Michigan residents who belong to a religious community differs from 68%.

2. a. $H_0: \mu = 24$
 $H_a: \mu < 24$ (claim) left-tailed test

b. Use 1-var stats to get $\bar{x} = 23.6$ and $s = 0.4$

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{23.6 - 24}{0.4/\sqrt{10}} = -3.16$$

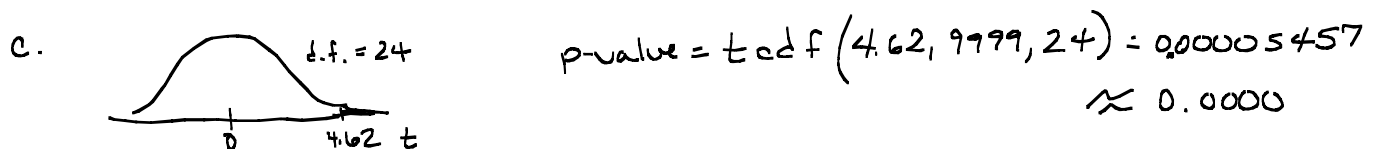


d. Reject H_0 because the p-value is less than α .

e. There is sufficient evidence to support the claim that the average weight of all similar bags of chips is less than 24 ounces.

3. a. $H_0: \mu = 23.3$
 $H_a: \mu > 23.3$ (claim) right-tailed test

b. $t = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{28.2 - 23.3}{5.3/\sqrt{25}} = 4.62$



d. Reject H_0 because the p-value $< \alpha$.

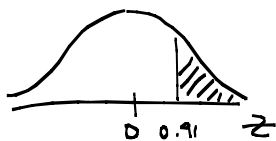
e. There is sufficient evidence to support the claim that the mean age of first marriage is greater than 23.3 years.

4. a. $H_0: \mu = 1$

$H_a: \mu > 1$ (claim) right-tailed test

b. $z = \frac{\bar{x} - \mu}{\sigma/\sqrt{n}} = \frac{1.05 - 1}{0.3/\sqrt{31}} = 0.93$

c.



$$\begin{aligned} \text{p-value} &= \text{normalcdf}(0.93, 9999, 0, 1) \\ &= 0.1762 \end{aligned}$$

d. Fail to reject H_0 because the p-value $> \alpha$.

e. There is not sufficient evidence to support the claim that the mean amount of waste recycled by adults in the United States is more than 1 pound per day.