

For each of the problems below, the conjectures and parameters for a hypothesis test are given. Using the appropriate technique for testing, state or find the following:

- | | |
|---|--|
| (a) State the Hypotheses, H_0 and H_1 | (e) Reject H_0 or do not reject H_0 |
| (b) Left, right or two-tailed | (f) Conclusion (in English) |
| (c) Boundaries of tails | (g) Maximal confidence for rejecting H_0 |
| (d) Test value | (h) p -value |

(1) A sample of 28 entering freshmen came from families with a mean income of \$88,500 and standard deviation of \$10,000. Use $\alpha = 0.05$ to test whether the mean salary of the families of the entering freshman class is less than \$91,600.

- | | |
|--|--|
| (a) H_0 : | (b) Circle one: Left-tailed Right-tailed Two-tailed |
| H_1 : | (c) Boundaries of tail(s): |
| (d) Test value: | (e) Circle one: Reject H_0 Do not Reject H_0 |
| (f) Conclusion: | |
| (g) Fill in the blank: _____ % is the highest confidence level for which H_0 would be rejected | |
| (h) $p =$ | |

(2) Test with 90% confidence the conjecture that the mean distance that new college freshmen travel from their home for college has recently changed from 67.5 miles. The standard deviation of such distances is historically 15.8 miles, and a sample of 1200 freshmen had a mean of 76.2 miles.

- | | |
|--|--|
| (a) H_0 : | (b) Circle one: Left-tailed Right-tailed Two-tailed |
| H_1 : | (c) Boundaries of tail(s): |
| (d) Test value: | (e) Circle one: Reject H_0 Do not Reject H_0 |
| (f) Conclusion: | |
| (g) Fill in the blank: _____ % is the highest confidence level for which H_0 would be rejected | |
| (h) $p =$ | |

(3) Verify or deny with 99% confidence the claim that the mean farm size in the mid-Atlantic is greater than 65 acres. The population standard deviation is known to be 7 acres. A sample of 22 farms has mean 68.2 acres.

- | | |
|--|--|
| (a) H_0 : | (b) Circle one: Left-tailed Right-tailed Two-tailed |
| H_1 : | (c) Boundaries of tail(s): |
| (d) Test value: | (e) Circle one: Reject H_0 Do not Reject H_0 |
| (f) Conclusion: | |
| (g) Fill in the blank: _____ % is the highest confidence level for which H_0 would be rejected | |
| (h) $p =$ | |