CHI-SQUARED DISTRIBUTION

TEXT: 11.1, 11.6

LAST NAME	FIRST NAME	DATE

1 (6 points)**.** For each question, make a sketch of the given pdf, shade the specified area under the curve, and find the corresponding critical value(s).

(a) χ^2 with 19 degrees of freedom, area in the left tail is 0.05.

(b) χ^2 with 39 degrees of freedom, area in the right tail is 0.02.

(c) χ^2 with 16 degrees of freedom, area of 0.05 split equally among the two tails.

2 (3 points)**.** For each question, make a sketch of the given pdf, shade the specified area under the curve, and find that area.

(a) χ^2 with 30 degrees of freedom, area to the left of $x = 20$.

(b) χ^2 with 2 degrees of freedom, area to the right of $x = 6$.

(c) χ^2 with 17 degrees of freedom, area between $x_1 = 5$ and $x_2 = 10$.

3 (6 points)**.** A manufacturer claims that the average thickness of the spearmint gum it produces is 7.5 one-hundredths of an inch, with standard deviation of 0.1. A quality control team regularly checks this claim. On one production run, they took a random sample of $n = 70$ pieces of gum and measured their thickness, producing the following sample statistics: $\overline{x} = 7.55$ and $s = 0.13$ one-hundredths of an inch. Test the manufacturer's claim about the population standard deviation with $\alpha = 0.05$.

(a) H_0 : H_1 :

(b) State the distribution of the test statistic:

(c) Sketch a graph of the distribution of the test statistic, find and label the critical value(s), shade the rejection region.

(d) Compute the test statistic and sketch it on the graph above.

(e) Find the p-value of the test.

(f) State the conclusion.