Hypothesis Testing Basic Exercises Part 2

1. First Name

2. Last Name

3. Specify the null and alternative hypotheses for the following claims. Use = for equal, <> for not equal, <= for less than and equal, >= for greater than and equal, < for less than, > for greater than.

   a. "I am going to get the majority of votes to win this election."
   H0: $p <= 0.5$ HA: $p > 0.5$

   b. "I suspect that your 10" pizzas are, on average, less than 10" in size."
   H0: $mu >= 10$ HA: $mu < 10$

4. Find the critical values for the following hypothesis tests. Specify whether the value is a z or t by entering the answer as "z=" or "t=."

   a. H0: $\mu \geq 4.5$; HA: $\mu < 4.5$; $\alpha = 0.05$; $n = 24$ $t^*_{0.05,23} = -1.714$

   b. H0: $p \leq 0.2$; HA: $p > 0.2$; $\alpha = 0.05$ $Z^*_{0.05} = 1.645$

   c. H0: $p = 0.2$; HA: $p \neq 0.2$; $\alpha = 0.05$ $Z^*_{0.025} = 1.96$

5. Calculate the test statistic for the following tests. Find the critical values for the following hypothesis tests. Specify whether the value is a z or t by entering the answer as "z=" or "t=."

   a. H0: $\mu \geq 200$; HA: $\mu < 200$; x-bar=196; s=0.98; n=26 $t = \frac{196-200}{0.98/\sqrt{26}} = \frac{-4}{0.1922} = -20.8$

   b. H0: $p = 0.3$; HA: $p \neq 0.3$; p-bar = 0.27; n = 30

$$Z = \frac{0.27-0.3}{\sqrt{\frac{(0.3)(0.7)}{30}}} = \frac{-0.03}{0.0837} = -0.36$$

6. Consider the following hypotheses: H0: $\mu = 12$; HA: $\mu \neq 12$ Approximate the p-value for this test based on the following sample information.

a. x-bar = 11, s = 3.2, n = 36 $t_{35} = \frac{11-12}{3.2/\sqrt{36}} = -1.88$ =T.DIST.2T(1.88,35)

Enter a numeric response.

b. x-bar = 11, s = 2.8, n = 36 $t_{35} = \frac{11-12}{2.8/\sqrt{36}} = -2.14$ =T.DIST.2T (2.14,35)

Enter a numeric response.

c. x-bar = 11, s = 2.8, n = 49 $t_{48} = \frac{11-12}{2.8/\sqrt{49}} = -2.5$ =T.DIST.2T(2.5,48)

Enter a numeric response.