Math 153 - Quiz 10

April 27, 2017

Name __key__

Score _____

Show all work to receive full credit. Supply explanations when necessary. YOU MUST WORK INDIVIDUALLY.

1. (3 points) A confidence interval estimate for a population proportion is $(0.565, 0.623)$. Find the point estimate $\hat{p}$ and the margin of error E.

$$\hat{p} = \frac{0.565 + 0.623}{2} = 0.594$$

$$E = 0.623 - 0.594 = 0.029$$

2. (2 points) Compute the value of $z_{\alpha/2}$ for a 90% confidence level.

$$\alpha = 0.10$$
$$\alpha/2 = 0.05$$
$$z_{\alpha/2} = \text{invNorm}\left(1 - \alpha/2\right) = \text{invNorm}(0.95)$$
$$\approx \boxed{1.645}$$

3. (5 points) In a recent survey of 2000 randomly selected Russian adults, 61% said that income inequality in their country has increased in recent years. Find a 95% confidence interval estimate for the true proportion of Russian adults who think income inequality has increased. Give an interpretation of your interval in a complete sentence.

1 - Prop Z Int

$X = 61\%$ of $2000 = 1220$

$n = 2000$

C-Level $= 0.95$

INTERVAL IS

$(0.58862, 0.63138)$

WE ARE 95% CONFIDENT THAT THE PROPORTION OF RUSSIAN ADULTS WHO THINK INCOME INEQUALITY HAS INCREASED IS BETWEEN 58.9% AND 63.1%.