

# WORKSHEET #6

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$$1. \hat{p} = \frac{119}{1000} = 0.119 \quad \hat{q} = 1 - 0.119 = 0.881$$

$$p = 0.1 \quad q = 1 - 0.1 = 0.9$$

$$n = 1000$$

$$2. H_0 : p = 0.1 \quad (\text{claim})$$

$$H_1 : p \neq 0.1$$

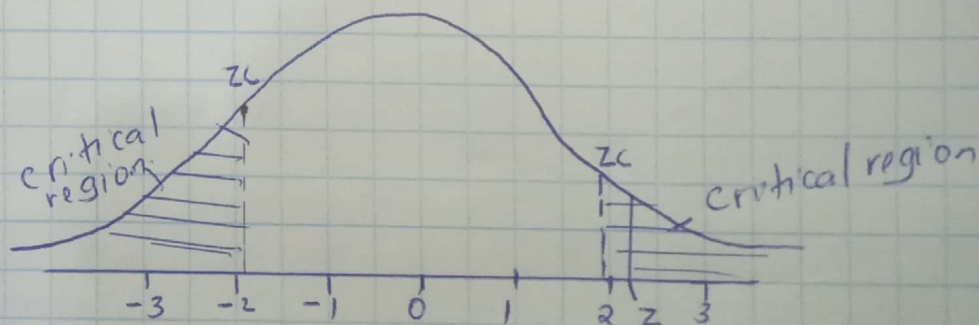
3 Two-tailed. It does not specify the direction so it can either be left or right

$$4. z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} = \frac{0.119 - 0.1}{\sqrt{\frac{0.1 \times 0.9}{1000}}} = 2.003$$

$$5. (a) \alpha = 0.05$$

$$(b) z_c = -1.96 \text{ and } +1.96$$

(c)



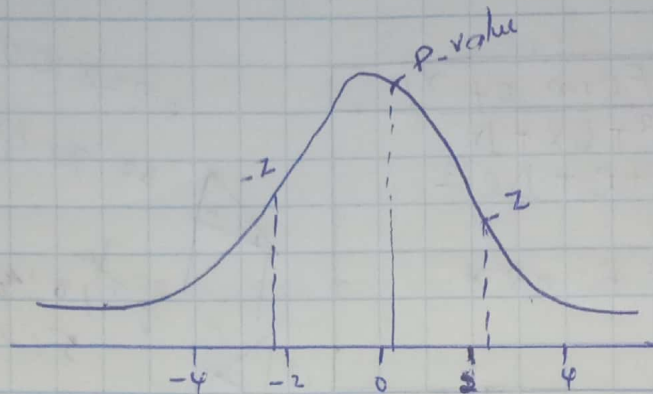
(d) Reject the null hypothesis since the test statistic is in the rejection region

(e) There is sufficient evidence to reject the claim that the proportion of zeros should be 0.1

6. (a)  $\alpha = 0.05$

(b)  $P\text{-value} = 0.0452$

(c)



(d) Reject null hypothesis.

(e) There is sufficient evidence to reject the claim that the proportion of zeros should be 0.01.

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$$E = Z_{\alpha/2} \sqrt{\frac{\hat{p}\hat{q}}{n}} = 1.96 \sqrt{\frac{0.119 \times 0.881}{1000}} = 0.02$$

$$= 0.0989 < p < 0.1391$$

~~The~~ The claim is not ~~the~~ true since the interval does not contain 0.

8. Yes.