

$$1. H_0: p = 0.40$$

$$n = 200 \quad H_1: p < 0.40$$

$$x = 90$$

$$\alpha = .05$$

$$p = .38$$



$$(4) Z_{\alpha} = \text{INVNORM}(.05)$$

$$Z_{\alpha} = -1.645$$

$$(5) \hat{p}_L = p_0 + Z_{\alpha} \sqrt{\frac{p_0(1-p_0)}{n}}$$
$$\hat{p}_L = 0.40 - 1.645 \sqrt{\frac{.40(1-.40)}{200}}$$

$$\hat{p}_L = 0.343$$

$$(6) Z_L = \frac{\hat{p}_L - p}{\sqrt{\frac{p(1-p)}{n}}}$$

$$Z_L = \frac{(0.343 - .38)}{\sqrt{\frac{.38(1-.38)}{200}}}$$

$$Z_L = -1.08$$

$$(7) \beta = \text{NORMCDF}(-1.08, \infty)$$

$$\beta = 0.8599$$

$$(8) \text{Power of TEST} = 1 - \beta$$

$$= 1 - .8599$$

$$= .1401$$

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