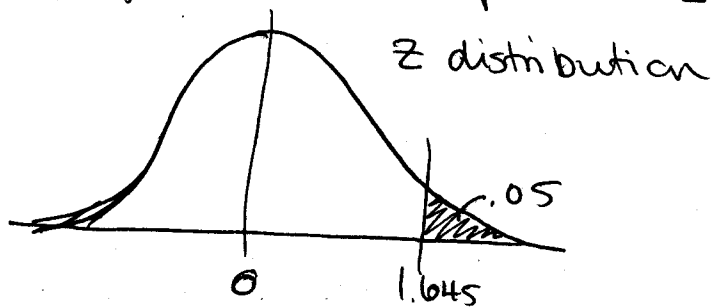


(1)

a.) reject H_0 when p-value $\leq .05$

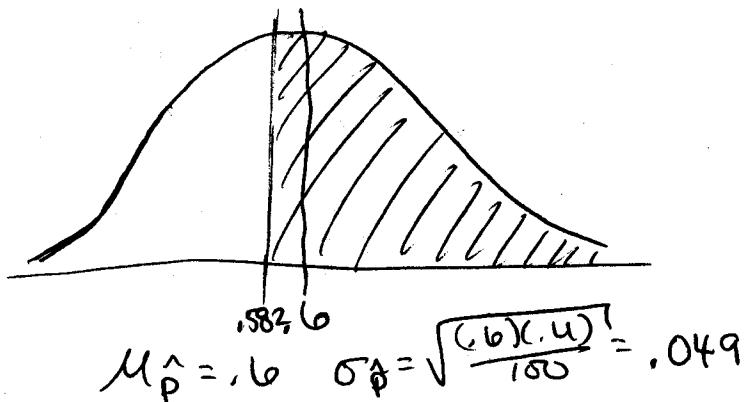
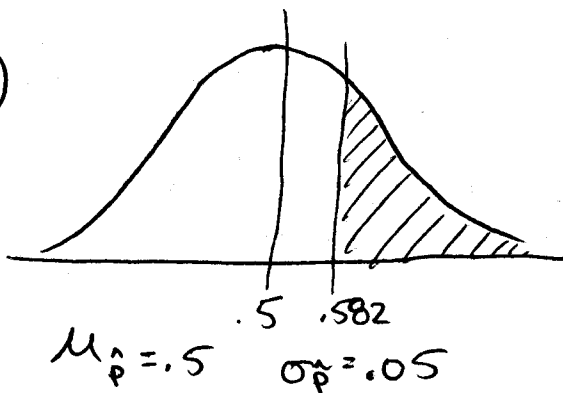


reject H_0 when $Z \geq 1.645$

$\Rightarrow$ means $\hat{p}$ needs to be 1.645 standard deviations or more above the null value, .50, to reject H_0 .

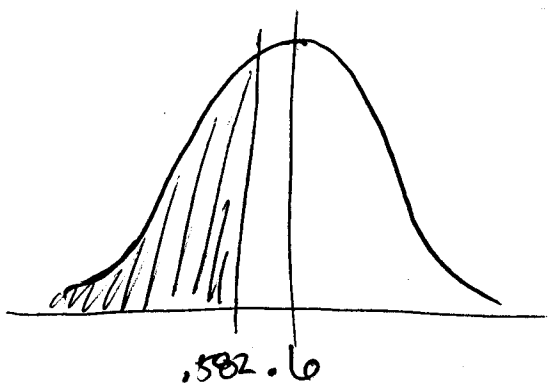
$$\hat{p} > .5 + 1.645(\sigma_{\hat{p}_0}) = .5 + 1.645\left(\sqrt{\frac{(.5)(.5)}{100}}\right) = .582$$

b.)



c.) P(Type II error)

= $P(\text{not rejecting } H_0 \text{ when } H_0 \text{ is false})$
 $\hat{p} < .582$ $p = .6$



$$= P(\hat{p} < .582 \text{ when } p = .6)$$

$$= P\left(Z < \frac{.582 - .6}{\sqrt{\frac{(.6)(.4)}{100}}}\right) = 1.0000$$

$$= P(Z < -0.37) = 0.3557$$