(8)

(a) $\hat{p} = 0.5067$ $p = 0.5$.

① Ho: $p = 0.5$ Ha: $p \neq 0.5$.

② $Z_{cal} = \dfrac{\hat{P} - p}{\sqrt{\frac{p(1-p)}{n}}} > 0.$

③ p-value $= 2\,P(Z > Z_{cal})$.

④ if p-value $< 5\%$, reject Ho.

(9) margin of error $= Z_{\frac{\alpha}{2}} \sqrt{\dfrac{p(1-p)}{n}}$

$$0.06 = 1.96 \sqrt{\frac{.4(.6)}{n}}$$

(10) $n = 1898$

(a) 95% CI for $p = \hat{p} \pm Z_{\frac{\alpha}{2}} SE(\hat{p})$

$$= 33\% \pm 1.96 \sqrt{\frac{(.33)(.67)}{1898}}$$

(b) ① Ho: Bush = Kerry Ha: Bush > Kerry.

② $Z_{cal} = \dfrac{.33 - .38}{\sqrt{\frac{.38(.62)}{1898}}} < 0.$

③ p-value $= P(Z > |Z_{cal}|)$

④ if p-value $< 5\%$, reject Ho.