1. (b) point est. is in the middle of the interval $= \frac{1}{2}(-4.82 + 2.12) = -1.35$

(c) Since 1.8 is inside the 96% CI $(-4.82, 2.12)$, the P-value is greater than 0.04.

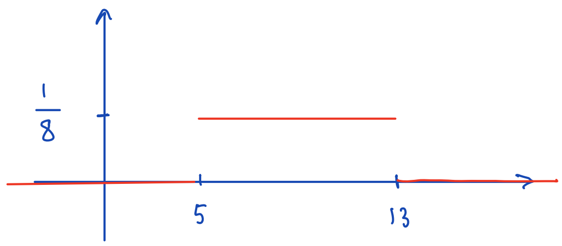
(d) margin of error $= \frac{1}{2}$(width of interval) $= \frac{1}{2}(2.12 + 4.82) = 3.47$

(e) Decreasing by factor $\left(\frac{1}{4}\right)$ is achieved by $(4)^2 n = (16)(31) = 496$

2. Option (a)

3. Option (c)

4. (a)



(b) $\Pr(X \geq 11) = \Pr(11 \leq X \leq 13) = (2)\left(\frac{1}{8}\right) = 0.25$

(c) $E(X) = \frac{1}{2}(5 + 13) = 9$, $\sigma_X = \frac{13 - 5}{\sqrt{12}} = \frac{4}{\sqrt{3}} \doteq 2.309$

(d) With $n = 30$, $\bar{X} \overset{\text{approx.}}{\sim} \text{Norm}(9, 2.309/\sqrt{30})$

$\Pr(\bar{X} \geq 11) = 1 - \text{pnorm}(11, 9, 0.4216)$

5. $B < A < C$

7. (a) $z^* = 1.880794$

(b) Take $n \geq \left[\frac{1.8808}{2(0.025)}\right]^2 = 1414.96$, so at least $n = 1415$.

(c) $\hat{p} = \frac{133}{411} = 0.3236$, $SE_{\hat{p}} = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \doteq \sqrt{\frac{(0.3236)(0.6764)}{411}} \doteq 0.02308$

So, boundaries are $0.3236 \pm (1.880794)(0.02308)$, or $(0.280, 0.367)$

8. (a) $H_0: \mu = 71$, $H_a: \mu \neq 71$

(b) $t = \frac{\bar{x} - 71}{s/\sqrt{n}} = \frac{69.4 - 71}{11.2974/\sqrt{40}} = \frac{-1.6}{1.7863} \doteq -0.8957$

P-value: 2 * pt(-0.8957, 39)

(c) qt(0.96, 39)

(d) $\bar{x} \pm t^* SE_{\bar{x}} = 69.4 \pm (1.798)\frac{11.2974}{\sqrt{40}}$, or $(66.19, 72.61)$