6) $p = 0,02$

$f_D = \frac{n_D}{n}$

Utilizando a Lei dos Grandes Números

$$P\{|f_D - p| > \varepsilon\} \leq \frac{p(1-p)}{n\varepsilon^2}$$

ou

$$P\{|f_D - p| \leq \varepsilon\} \geq 1 - \frac{p(1-p)}{n\varepsilon^2}$$

$$\therefore P\{|f_D - 0,02| \leq 0,05\} > 1 - \frac{0,02(1-0,02)}{n\ 0,05^2} \geq 0,98$$

$$\therefore \frac{0,02 * 0,98}{n\ 0,05^2} \leq 0,02 \Rightarrow n \geq \frac{0,98}{0,05^2} = 392$$

7 $X_i \sim Unif(-0,5; 0,5)$ → iid

$$S = \sum_{i=1}^{1500} X_i \Rightarrow E(S) = n\mu = 1500 * \frac{(b+a)}{2} = 0$$

$$V(S) = n\sigma^2 = 1500 \left(\frac{b-a}{12}\right)^2 = \frac{1500\ (0,5+0,5)^2}{12}$$

$\sigma/\sqrt{n}$

$$T = \frac{S - \mu_S}{\sigma_S} \sim N(0,1)$$

$$P(-15 < S < 15) = P\left(\frac{-15-0}{\sqrt{\frac{1500}{12}}} < Z < \frac{15-0}{\sqrt{\frac{1500}{12}}}\right) = P(-1,34 < Z < +1,34)$$

$$= \Phi(1,34) - \Phi(-1,34) = 0,9099 - 0,0901$$

$$= 0,8198$$

$$P(|S| > 15) = 1 - P(|S| < 15) = 1 - 0,8198 = 0,1802$$