№1

$Ex = 300$

$P(x > a) \le \frac{Ex}{a}$

1) $P(x \ge 400) \le \frac{300}{400} = 0,75$

2) $P(x \le 500) = 1 - P(x \ge 500) = \frac{2}{5} = 0,4$

№2

$n = 1600$
$p = 0,3$
$a = 50$

$P(x > a) \le \frac{Ex^2}{a^2}$

$Ex = np = 1600 \cdot 0,3 = 480$

$D(x) = np(1-p) = 1600 \cdot 0,3 \cdot 0,7 = 336$

$P(|480 - x| < 50) \ge 1 - \frac{336}{480} = 0,8656$

№3

$x_i = 9, 5, 7, 7, 4, 10$, где $i = \overline{1,6}$

$Dx = 1$

$\sigma = \sqrt{D} = 1$

$\bar{x} = \frac{9+5+7+7+4+10}{6} = 7$

$P\left(\bar{x} - \frac{\sigma}{\sqrt{n}} x_{\frac{\alpha}{2}} \le \mu \le \bar{x} + x_{\alpha/2} \frac{\sigma}{\sqrt{n}}\right) = 1 - \alpha = 0,99$

$\alpha = 0,01$