# Act: Intervalos de Confianza

## Problema 1:

$n = 75, \quad \hat{\mu} = \bar{x} = 8.5, \quad \sigma = 0.3$

$80\% = ?$

$$P(z > a) = 0.1$$
$$P(z \leq a) = 1 - 0.1$$
$$P(z \leq a) = 0.9$$
$$\therefore a = \pm 1.285$$

$$\therefore a_0 = -1.285\left(\frac{0.3}{\sqrt{75}}\right) + 8.5 = 8.455$$
$$a_1 = 1.285\left(\frac{0.3}{\sqrt{75}}\right) + 8.5 = 8.545$$

$\therefore$ 80%

$[8.455, 8.545]$

## Problema 2:

$n = 200$, $\hat{\mu} = \bar{x} = 45$, $\sigma = 10$

$85\% = ?$

$$P(Z > a) = 0.075$$

$$P(Z \leq a) = -0.075 + 1$$

$$P(Z \leq a) = 0.925$$

$$\therefore a = \pm 1.435$$

$$\therefore a_0 = -1.435\left(\frac{10}{\sqrt{200}}\right) + 45 = 43.985$$

$$a_1 = 1.435\left(\frac{10}{\sqrt{200}}\right) + 45 = 46.015$$

$\therefore 85\%$

$$[43.985, 46.015]$$

## Problema 3:

a) $A = 2V_c\left(\frac{\sigma}{\sqrt{n}}\right) = 1.5$

$V_c\left(\frac{\sigma}{\sqrt{n}}\right) = 0.75$

$V_c \cdot \sigma = 0.75 \cdot \sqrt{n}$

$\sqrt{n} = \frac{V_c \cdot \sigma}{0.75}$

$n = \left(\frac{V_c \cdot \sigma}{0.75}\right)^2$

① $n = \left(\frac{V_c \cdot \sigma}{0.75}\right)^2$

$= \left(\frac{1.285(0.3)}{0.75}\right)^2$

$n_1 = 0.264196$

② $n = \left(\frac{V_c \cdot \sigma}{0.75}\right)^2$

$= \left(\frac{1.435(10)}{0.75}\right)^2$

$n_2 = 366.08\overline{4}$