$$P\left(-u_{1-\frac{\alpha}{2}} \le u \le u_{1-\frac{\alpha}{2}}\right) = 1-\alpha$$

$$\Leftrightarrow P\left(-u_{0,975} \le u \le u_{0,975}\right) = 0,95$$

$\Downarrow$ Tabelle 16.1 S. 192

Quantile: $u_{1-\frac{\alpha}{2}} = 1,97$

Transformation: $u = \dfrac{\bar{x} - \mu}{\sigma / \sqrt{n}}$ $\Rightarrow$ (16.27) S. 193

$$\Leftrightarrow P\left(-u_{1-\frac{\alpha}{2}} \le \frac{\bar{x}-\mu}{\sigma/\sqrt{n}} \le u_{1-\frac{\alpha}{2}}\right) = 1-\alpha$$

$$\Leftrightarrow P\left(-\bar{x} - u_{1-\frac{\alpha}{2}} \cdot \frac{\sigma}{\sqrt{n}} \le -\mu \le \bar{x} + u_{1-\frac{\alpha}{2}} \cdot \frac{\sigma}{\sqrt{n}}\right) = 1-\alpha$$

$$\Leftrightarrow P\left(\bar{x} - u_{1-\frac{\alpha}{2}} \cdot \frac{\sigma}{\sqrt{n}} \le \mu \le \bar{x} + u_{1-\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}\right) = 1-\alpha$$

Konfidenzintervall: $\left[\bar{x} - u_{1-\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}} ; \bar{x} + u_{1-\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}\right]$

$\bar{x} = 73,761$
$u_{1-\frac{\alpha}{2}} = 1,97$
$\sqrt{n} = \sqrt{46}$
$\sigma = 1,1456$

$= [73,428 ; 74,094]$

$\Uparrow$ Konfidenzniveau 95%

c) $a = u_{1-\frac{\alpha}{2}} \cdot \dfrac{\sigma}{\sqrt{n}} \Leftrightarrow n = \left(u_{1-\frac{\alpha}{2}} \cdot \dfrac{\sigma}{a}\right)^2$

$$\left.\begin{array}{l} a = 1.Ah \\ u_{1-\frac{\alpha}{2}} = 1,97 \\ \sigma = 1,1456 \end{array}\right\} \Rightarrow \underline{\underline{n = 5}}$$