HW 9

P1

1. $X \pm 2.81 \frac{\sigma}{\sqrt{n}}$

$z_{\frac{\alpha}{2}} = 2.81 \qquad \frac{\alpha}{2} = 0.0025 \qquad \alpha = 0.005$

conf. lv. $= 0.995$

2) $\bar{X} \pm 1.44 \frac{\sigma}{\sqrt{n}}$

$z_{\frac{\alpha}{2}} = 1.44 \qquad \frac{\alpha}{2} = 0.0749 \qquad \alpha = 0.1498$

$cl = 1 - \alpha = 0.8502$

3. $cl = 1 - \alpha = 0.997 \qquad \alpha = 0.003$

$z_{\alpha/2} = z_{0.0015} = 2.96$

4. c.l. $= 0.75 \qquad \alpha = 0.25$

$z_{\alpha/2} = z_{0.125} = 1.155$

№2

1 $\sigma = 0{,}75$

1) $\alpha = 0{,}05$

$n = 20$

$\bar{x} = 4{,}85$

$$\bar{x} \pm z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$4{,}85 \pm 1{,}96 \frac{0{,}75}{\sqrt{20}}$$

$$(4{,}52;\ 5{,}18)$$

2) $\alpha = 0{,}02$

$n = 16$

$\bar{x} = 4{,}56$ $\qquad z_{0{,}01} = 2{,}32$

$$4{,}56 \pm 2{,}32 \frac{0{,}75}{\sqrt{16}}$$

3) $\alpha = 0{,}05$ $\quad w = 0{,}4$

$$2 \cdot z_{\alpha/2} \frac{0{,}75}{\sqrt{n}} = 0{,}4$$

$$n = \left(\frac{2 \cdot 1{,}96 \cdot 0{,}75}{0{,}4}\right)^2 = 54{,}02 \qquad n = 55$$

4) $\alpha = 0{,}01$ $\quad t_{0{,}005} = 2{,}58$

$$n = \left(\frac{2 t_{\alpha/2} \cdot \sigma}{\omega}\right)^2 = \left(\frac{2 \cdot 2{,}58 \cdot 0{,}75}{0{,}4}\right)^2 = (9{,}67)^2 \approx 93{,}6$$

$n = 94$

(P3) $\quad n = 44 \quad \bar{x} = 35{,}02 \quad s = 18{,}94$

1) $\alpha = 0{,}05$

$$35{,}02 \pm 1{,}96 \cdot \frac{18{,}94}{\sqrt{44}}$$

$$35{,}02 \pm \frac{18{,}54}{\sqrt{44}} \quad 35 \pm 5{,}59$$

$$(29{,}43 ; 40{,}6)$$

2)

$$\bar{x} \pm t_{\alpha/2, n-1} \cdot S\sqrt{1 - \frac{1}{n}}$$

$$35{,}02 \pm 2{,}064 \cdot 18{,}94 \sqrt{1 - \frac{1}{44}}$$

$$35{,}02 \pm 39{,}09 \frac{3\sqrt{85}}{2\sqrt{11}}$$

$$35{,}02 \pm 39{,}5$$

$$(-3{,}48 \quad 74{,}5)$$

P.4

$n = 126$

$\bar{x} = 29,2$

$\mu = 18,2$

[illegible] $\alpha = 0,05$ $\alpha/2 = 0,025$

$$29,2 \pm 1,96 \frac{7,5}{\sqrt{128}}$$

$[27,89 \ ; \ 30,51]$

μ [illegible] [illegible] [illegible] [illegible] [illegible]