

10. Hausübung

5.69) Glücksrad mit 3 Sektoren: $p = \frac{1}{3}$ $q = \frac{2}{3}$ $n = 800$

$$\mu = n \cdot p = 266,67 \rightarrow \text{STO A} \quad \sigma = \sqrt{n \cdot p \cdot q} = 13,33 \rightarrow \text{STO B}$$

a) $P(300 \leq X \leq 800)$ $x_1 = 299,5$ $x_2 = 800,5$

$$z_1 = 2,46 \quad z_2 = 40$$

$$\varphi(40) - \varphi(2,46) = 1 - 0,99305 = 0,00695 = \underline{\underline{0,7\%}}$$

b) $P(0 \leq X \leq 250)$ $x_1 = -0,5$ $x_2 = 250,5$

$$z_1 = -20 \quad z_2 = -1,21$$

$$\varphi(-1,21) - \varphi(-20) = 1 - \varphi(1,21) - 0 = 1 - 0,88686 = 0,11314 = \underline{\underline{11,3\%}}$$

c) $P(250 \leq X \leq 270)$ $x_1 = 249,5$ $x_2 = 270,5$

$$z_1 = -1,29 \quad z_2 = 0,29$$

$$\begin{aligned} \varphi(0,29) - \varphi(-1,29) &= \varphi(0,29) - (1 - \varphi(1,29)) = \varphi(0,29) + \varphi(1,29) - 1 = \\ &= 0,61489 + 0,90147 - 1 = 0,51636 = \underline{\underline{51,6\%}} \end{aligned}$$