

## 8. Hausübung

5.05 a)  $\mu = 10, \sigma = 2 \quad P(X \leq 2) = ?$

$$z = \frac{2-10}{2} = -4 \quad \text{Li Sp neg } z$$

$$\varphi(-4) = 1 - \varphi(4) = 0,0003 = \underline{0,003\%} \approx 0\%$$

b)  $P(X \leq 4,8)$

$$z = \frac{4,8-10}{2} = -2,6 \quad \text{Li Sp neg } z$$

$$\varphi(-2,6) = 1 - \varphi(2,6) = 0,00466 = \underline{0,466\%} \approx 0,5\%$$

5.09 a)  $\mu = 20, \sigma = 1,2 \quad P(S \leq 19)$

$$z = \frac{19-20}{1,2} = -0,83 \quad \text{Li Sp neg } z$$

$$\varphi(-0,83) = 1 - \varphi(0,83) = 0,20027 = \underline{20,027\%} \approx 20\%$$

d)  $P(S \geq 22)$

$$z = \frac{22-20}{1,2} = 1,67 \quad \text{Re Sp pos } z$$

$$1 - \varphi(1,67) = 0,04746 = \underline{4,746\%} \approx 4,7\%$$

g)  $P(18 \leq S \leq 21)$

$$z_1 = \frac{18-20}{1,2} = -1,67 \quad z_2 = \frac{21-20}{1,2} = 0,83$$

$$\varphi(0,83) - \varphi(-1,67) = \varphi(0,83) - (1 - \varphi(1,67)) =$$

$$= \varphi(0,83) + \varphi(1,67) - 1 = 0,79673 + 0,95254 - 1 =$$

$$= 0,74927 = \underline{74,927\%} \approx 74,9\%$$