

Blatt 14

A5)

$$(a) \text{Var}(\bar{X}_3) = \frac{1}{36} (b-a)^2$$

$$(b^*) (i) \bar{A}_3 : E[\bar{A}_3] = a + \frac{1}{4} (b-a)$$

$$\text{Var}[\bar{A}_3] = \frac{3}{80} (b-a)^2$$

$$(ii) \bar{B}_3 : E[\bar{B}_3] = b - \frac{1}{4} (b-a)$$

$$\text{Var}[\bar{B}_3] = \text{Var}[\bar{A}_3]$$

$$(iii) \bar{\mu} := \frac{1}{2} (\bar{A}_3 + \bar{B}_3)$$

$$E[\bar{\mu}] = \frac{a+b}{2}$$

$$\text{Var}[\bar{\mu}] = \frac{1}{80} \frac{(b-a)^2}{2}$$

$$(c^*) \text{Var}[\bar{\mu}] < \text{Var}[\bar{X}_3] \quad (\text{s. (a), (b}^*))$$

$E[\bar{\mu}] = m \Rightarrow \bar{\mu}$ erwartungstreuer Schätzer