

Lösningförslag

October 2022

1

$$\mathbb{E}\xi = \sum_{k=0}^5 kP(\xi = k) = 3.3$$
$$\mathbb{V}\xi = \mathbb{E}\xi^2 - (\mathbb{E}\xi)^2 = 2.31$$

där vi utnyttjat $\mathbb{E}\xi^2 = \sum_{k=0}^5 k^2P(\xi = k) = 13.2$.

2

$H_0 : \mu = 30$ $H_1 : \mu > 30$
 $\bar{x} = 30.4625$ $s = 0.5343$
 $t = \frac{\bar{x}-30}{s/\sqrt{8}} = 2.44 > t_{0.05}(7) = 1.89$
Förkasta H_0 , misstanken är befogad.

3

$S_{xx} = 4000$, $S_{yy} = 1357.2$, $S_{xy} = 2300$, $\bar{x} = 140$, $\bar{y} = 65.6$
 $\alpha^* = -14.9$, $\beta^* = 0.575$
 $\sigma^* = \sqrt{\frac{1}{3}(S_{yy} - \frac{S_{xy}^2}{S_{xx}})} = 3.4$

4

$$\begin{aligned} P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\ &= P(A) + P(B) - P(B)P(A | B) \\ &= 0.6 + 0.5 - 0.3 \cdot 0.5 \\ &= 0.95 \end{aligned}$$

5

Stickprov i par, $z_i = y_i - x_i$ $i = 1 \dots 6$
 $\bar{z} = 2.8667$, $s_z = 3.8098$
 $I_\Delta = (\bar{z} \pm t_{0.025}(5) \cdot \frac{s_z}{\sqrt{6}}) = (-1.13, 6.86)$