

Test-deg-selv

$$1) \text{ Vi vet at } \sum_{x=0}^3 P(X=x) = 1$$

$$k + 0.3 + 0.2 + 0.2 = 1$$

$$k = 1 - 0.3 - 0.2 - 0.2$$

$$\underline{\underline{k = 0.3}}$$

$$2) E(X) = \sum_{x=0}^3 x P(X=x)$$

$$= 0 \cdot k + 1 \cdot 0.3 + 2 \cdot 0.2 + 3 \cdot 0.2 = \underline{\underline{1.3}}$$

$$3) SD(X) = \sqrt{\text{Var}(X)} \text{ eg } \text{Var}(X) = \sum_{x=-1}^1 (x-\mu)^2 P(X=x)$$

$$\mu = E(X) = 0 \quad (\text{fordi fordelingen er sym. rundt } 0)$$

$$\begin{aligned} \downarrow \text{Var}(X) &= (-1-0)^2 \frac{1}{3} + (0-0)^2 \frac{1}{3} + (1-0)^2 \frac{1}{3} \\ &= \frac{1}{3} + 0 + \frac{1}{3} = \frac{2}{3} \end{aligned}$$

$$SD(X) = \sqrt{\frac{2}{3}} \approx \underline{\underline{0.82}}$$

$$4) \text{ Linearkombinasjon } E(aX + bY) = aE(X) + bE(Y)$$

$$E(X + 2Y) = E(X) + 2E(Y) = 0 + 2 \cdot (-2) = \underline{\underline{-4}}$$

$$5) \text{Var}(aX + bY) = a^2 \text{Var}(X) + b^2 \text{Var}(Y) + 2ab \text{Cov}(X, Y)$$

$$\text{uavhengige} \rightarrow \text{Cov}(X, Y) = 0$$

$$\Rightarrow \text{Var}(X + 2Y) = \text{Var}(X) + 4 \text{Var}(Y) = 3 + 4 \cdot 1 = \underline{\underline{7}}.$$