$\begin{pmatrix} & & & & & \\ 0.1 & 0.05 & 0.35 & 0.15 & 0.2 \end{pmatrix}$

$2: \begin{pmatrix} 1/2 & 1 & 2 & 9/2 & 4 & 9 \\ 0.1 & 0.15 & 0.35 & 0.2 & 0.05 & 0.15 \end{pmatrix}$

Temă - calcul coef de corelație

b) $\rho(X,Y) = \dfrac{cov(X,Y)}{\sqrt{var(X)\cdot var(Y)}}$

$cov(X,Y) = E(X\cdot Y) - E(X)\cdot E(Y)$

$E(X) = 0{,}25 + 2\cdot 0{,}4 + 3\cdot 0{,}35 = 2{,}1$

$E(Y) = 0{,}35 + 2\cdot 0{,}65 = 1{,}65$

~~$E(X\cdot Y) =$~~

$X\cdot Y: \begin{pmatrix} 1 & 2 & 2 & 4 & 3 & 6 \\ 0.15 & 0.1 & 0.05 & 0.35 & 0.15 & 0.2 \end{pmatrix}$

$X\cdot Y: \begin{pmatrix} 1 & 2 & 3 & 4 & 6 \\ 0.15 & 0.15 & 0.15 & 0.35 & 0.2 \end{pmatrix}$

$E(X\cdot Y) = 0{,}15 + 2\cdot 0{,}3 + 0{,}45 + 4\cdot 0.35 + 6\cdot 0.2 = 3.5$

$cov(X,Y) = E(XY) - E(X)\cdot E(Y) = 3.5 - 2.1 * 1.65 = 0.035$

$Var(X) = E(X^2) - (E(X))^2$

$Var(Y) = E(Y^2) - (E(Y))^2$

$X^2: \begin{pmatrix} 1 & 4 & 9 \\ 0.25 & 0.4 & 0.35 \end{pmatrix}$

$Y^2: \begin{pmatrix} 1 & 4 \\ 0.35 & 0.65 \end{pmatrix}$

$E(X^2) = 0.25 + 4\cdot 0.4 + 9\cdot 0.35 = 5$

$E(Y^2) = 0.35 + 4\cdot 0.65 = 2.95$

$var(X) = 5 - (2.1)^2 = 0.59$

$var(Y) = 2.95 - (1.65)^2 = 0.2275$

$\rho(X,Y) = \dfrac{cov(X,Y)}{\sqrt{var(X)\cdot var(Y)}} = \dfrac{0.035}{\sqrt{0.59\cdot 0.2275}} = \dfrac{0.035}{\sqrt{0.134225}} = \dfrac{0.035}{0.3663} \simeq 0.095$