

$$\textit{Correlation}(X, Y) = \textit{Correlation}(X, 1/4 \times Y + 3/4 \times X)$$

$$= \textit{Correlation}(X, Z) = \frac{2}{3} = \frac{\textit{Covariance}(X, Z)}{\phi_1 \phi_2}$$

$$\textit{Covariance}(X, Z) = \frac{2}{3} \times 3 \times 5 = 10$$