

Concept Question 8-7: If \mathbf{x} is a random vector and $\mathbf{y} = \mathbf{A}\mathbf{x}$, how is \mathbf{K}_y related to \mathbf{K}_x ? Is it $\mathbf{K}_y = \mathbf{A}\mathbf{K}_x\mathbf{A}^T$ or $\mathbf{K}_y = \mathbf{A}^T\mathbf{K}_x\mathbf{A}$?

$\mathbf{K}_y = \mathbf{A}\mathbf{K}_x\mathbf{A}^T$. This is easy to remember: Let \mathbf{x} be an N -vector and \mathbf{y} be an M -vector, so \mathbf{A} is $M \times N$. Only $\mathbf{K}_y = \mathbf{A}\mathbf{K}_x\mathbf{A}^T$ makes sense.