5.) $A = \begin{bmatrix} \cos(\theta) & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$

$A^{-1} = \dfrac{adj(A)}{det(A)}$

$det(A) = (\cos\theta)(\cos\theta) - (-\sin\theta)(\sin\theta)$

$= \cos^2\theta + \sin^2\theta$

$= 1$

$adj(A) = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$

$A^{-1} = \dfrac{adj(A)}{det(A)} = \quad adj(A) = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$

$A^{T} = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$

$\Rightarrow \boxed{A^{-1} = A^{T}}$