General Identities

$$\left(A^T\right)^{-1} = \left(A^{-1}\right)^T$$

$$(AB)^T = B^T A^T$$

$$(A+B)^T = A^T + B^T$$

$$A(B+C) = AB + AC$$

$$AA^{-1} = A^{-1}A = I$$

$$\left(A^{-1}\right)^{-1} = A$$

$$\left(A^T\right)^T = A$$

$$a^T b = b^T a$$

$$(\gamma a)^T b = \gamma \left(a^T b\right)$$

$$(a+b)^T c = a^T c + b^T c$$

$$x^T Ay = y^T Ax \text{ if A is symmetric}$$

$$(AB)^{-1} = B^{-1}A^{-1}$$

$$(ABC\dots)^{-1} = \dots C^{-1}B^{-1}A^{-1}$$

$$AA^\dagger A = A$$

$$A^\dagger AA^\dagger = A^\dagger$$

$$(AA^\dagger)^T = AA^\dagger \text{ (symmetric)}$$

$$(A^\dagger A)^T = A^\dagger A \text{ (symmetric)}$$