SVD and the Generalized Inverse

The singular value decomposition of the generalized inverse X is

$$X = M^{\dagger} = V \Sigma^{\dagger} U^T,$$

where the symbol † means generalized or pseudoinverse and the generalized inverse of Σ is given by the diagonal $n \times m$ matrix of the inverses of all the nonzero singular values σ_i, while the remaining diagonal entries are zero.