Problem Q2. *Solution.* We set up our system of equations:

$$\begin{align} AZ + BX &= 0 \tag{1} \\ A \cdot 0 + BY &= 0 \tag{2} \\ 0 \cdot Z + DX &= I \tag{3} \\ 0 \cdot 0 + DY &= 0. \tag{4} \end{align}$$

In (3), we deduce that since each component in the matrices are square, then D is invertible, so we get $X = D^{-1}$. Then for (4), we have that $Y = 0$ since D is nonzero. For (1), we get that $AZ = -BX$. Again, since all entries are square, we can find Z by applying the inverse of A^{-1} to both sides of the equation to get $Z = -A^{-1}BX$. Thus we have found formulas for X, Y, Z.