Show steps, explain what you do. No calculators.

1. Obtain the general solution $y(t)$ for $y'' + y' = 6\sin(2t)$, then give the “steady state” solution.

2. Let $A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$ and $B = \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix}$. Calculate the three products $AB$, $BA$, and $A^TB$. 