

Part 4

1. Translation of point by $(-1,2,0)T$, Yaw of 45 degrees, roll and pitch unchanged.

2.
$$\begin{pmatrix} \cos(45) & 0 & \sin(45) & 3 \\ 0 & 1 & 0 & 0 \\ -\sin(45) & 0 & \cos(45) & 2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

3.
$$\begin{pmatrix} \frac{1}{2} & \frac{1}{\sqrt{2}} & -\frac{1}{2} & -\frac{\sqrt{2}-1}{2} \\ -\frac{1}{2} & \frac{1}{\sqrt{2}} & \frac{1}{2} & -\frac{3\sqrt{2}-1}{2} \\ \frac{1}{\sqrt{2}} & 0 & \frac{1}{\sqrt{2}} & -\frac{5}{\sqrt{2}} \\ 0 & 0 & 0 & 1 \end{pmatrix}$$