Step-1

Given that the transformation transforms (x_1, x_2, x_3) into (x_2, x_3, x_1).

We have to find the axis and the rotation angle for the given transformation.

Step-2

We know that a rotation matrix turns the whole space around the origin.

Therefore, x is the axis and rotation angle for the transformation that takes (x_1, x_2, x_3) into (x_2, x_3, x_1) is $\boxed{90°}$