Step-1

If $B = A$, then $AB = BA$.

If $B = 0$, then $AB = BA$.

If A is invertible and if $B = A^{-1}$, then $AB = BA$.

If B is I, that is identity matrix, then also $AB = BA$.

Step-2

Note that, in each of these cases, $AB - BA = 0$, that is, a zero matrix.

Let A be a 5 by 5 matrix. Suppose $AB - BA = 0$.

Since, no other information is mentioned about A, it may not be invertible. In such case the equation $B = A^{-1}$ is meaningless. Also, B should not be the zero matrix. Further, if B is to be different from A, the equation $B = A$ is also meaningless.

Step-3

Therefore, the required solution is $\boxed{B = I}$.

Note that, $B \neq 0$, $B \neq A$ and $AB - BA = 0$.

Therefore, for this matrix, the 25 by 25 matrix is singular.