Step-1

If $B = M^{-1}AM$ for an invertible matrix M

By the product rule of determinants, we get $\det B = \det\left(M^{-1}AM\right)$

$= \det M^{-1} \times \det A \times \det M$

While determinant is a scalar quantity, the product of determinants is commutative

So, this equation can be written as $= \det A\left(\det M^{-1} \times \det M\right)$

$= \det A\left(\det M^{-1}M\right)$

$= \det A\left(\det I\right)$

We know that the determinant of the identity matrix is 1

In other words, $\det\left(M^{-1}AM\right) = \det A$

Step-2

Also, $\det A^{-1}B = \det\left\{A^{-1}\left(M^{-1}AM\right)\right\}$

$= \det\left(A^{-1}\right)\det\left(A\right)$ By the above result

$= \det\left(A^{-1}A\right)$ By the product rule

$= \det I$

$= 1$