MATH 114 Final Exam Question 4

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4. Let A be an invertible $n \times n$ matrix and B be a $n \times n$ matrix such that $\det(B) = 7$.

(a) Is B invertible?

B is invertible since it is square and its determinant is not zero.

(b) Compute $\det(ABA^{-1})$.

Matrix multiplication is associative, so we can do the following:

$$\begin{aligned}\det(ABA^{-1}) &= \det(AA^{-1}B) \\ &= \det(IB) \\ &= 7\end{aligned}$$