

Math 290 ELEMENTARY LINEAR ALGEBRA

EXTRA CREDIT HOMEWORK

March 11 (Tue), 2008

Due on March 25 (Tue), 2008

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Problem. Generalize the argument in Quiz – VIII, problem [III] to prove the following: For arbitrary two $n \times n$ matrices

$$A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{bmatrix}, \quad B = \begin{bmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ b_{n1} & b_{n2} & \cdots & b_{nn} \end{bmatrix},$$

and a scalar t ,

$$\det \left(tI - BA \right) = \det \left(tI - AB \right).$$

Write your answer in a separate sheet.