

2. In the following equation, **A**, **B**, and **C** are all square matrices of the same order. Solve the equation for matrix **B**.

$$\mathbf{A}^t\mathbf{B}\mathbf{A} = \mathbf{C}.$$

3. A researcher trying to predict educational achievement has 5 predictors. Three of them are aspiration variables (parental aspirations, peer aspirations, and self aspirations). The other two predictors are parental education variables (mother's education and father's education). Three regression equations are estimated: one using only the 3 aspiration predictors ($R^2 = .35$); one using only the 2 parental education predictors ($R^2 = .40$); and one using all 5 predictors ($R^2 = .55$). Test the hypothesis that knowing parents' education level significantly improves prediction over knowing only aspiration variables. There are 100 subjects in the sample. [*Hint*: See Notes p. 18-19.]

4. What, if anything, is wrong in the following report? E reports that the correlation between high school grades and college grades is .47 and that when he adds the SAT and high school grades in a multiple regression analysis predicting college grades the multiple $R^2 = .17$.

5. I have put a JMP file on my webpage containing composite ACT, GPA, and Wonderlic intelligence scores for 97 students collected here at UL a number of years ago. Please use JMP and Excel to compute the probability that a student with an ACT of 27 and a Wonderlic IQ score of 32 would have a GPA greater than 3.5. You'll find the TDIST() function of Excel to be helpful in the final computation.