Problem Set 4
Econ 4113
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Due: October 12, 2004

Problem 1: Suppose that $A$ is an $m \times m$ matrix that is a differentiable function of a single variable $t$. Assume that $A(0)$ is invertible. Obtain a formula for $\frac{dA^{-1}}{dt}(0)$ by differentiating the identity $A(t) \cdot A(t)^{-1} = I_m$. Suppose that $B$ is another $m \times m$ matrix valued function of $t$. Compute $\frac{d(A^{-1}B)}{dt}(0)$ and $\frac{dB(A^{-1})}{dt}(0)$. (Be careful to not inadvertently reorder matrix multiplications when the matrices may not commute.)

Problem 2: Do Exercise 19.13 (p. 457) from Simon and Blume.

Problem 3: Do Exercise 4.3 from Dixit.