

ECONOMICS 207
FALL 2006
EXAM 4

Problem 1 (40 pts). Find the inverse of the matrix $A = \begin{bmatrix} 3 & 5 \\ 4 & 7 \end{bmatrix}$.

Problem 2. Use the inverse matrix you found above to solve the following system of equations:

$$\begin{bmatrix} 3 & 5 \\ 4 & 7 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$$

Problem 3. Calculate the determinant of the matrix $A = \begin{bmatrix} -5 & 2 & 1 \\ 2 & -1 & 4 \\ -3 & 1 & 7 \end{bmatrix}$

Problem 4. Use Cramer's Rule to solve the following system of equations:

$$\begin{bmatrix} 3 & 0 & 4 \\ 2 & -1 & 7 \\ 1 & 0 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$$

Problem 5. Find all the first and second order partial derivatives of $f(x, y, z) = 30x^{\frac{1}{2}}y^{\frac{1}{3}}z^{\frac{1}{5}}$

Problem 6. Find all the first and second order partial derivatives of $f(x, y) = e^{x^2y}$