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Due Monday 21 February 2005

Linear Algebra, Math 147-002
Homework set #4

1. Let

$$A = \begin{bmatrix} 4 & -8 & 5 \\ 4 & -7 & 4 \\ 3 & -4 & 2 \end{bmatrix}.$$

- (a) Exhibit A^{-1} . (Hint, go back to problem 1.2.5).
- (b) Check that $AA^{-1} = A^{-1}A = I$.
- (c) Compute A^T , and check that $(A^T)^{-1} = (A^{-1})^T$.

2. (a) Let A is as in part 1, and $b = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$. Find the solution to $Ax = b$ using two different methods, first using Gaussian elimination (forward elimination and back substitution), and then by computing $A^{-1}b$.
- (b) Why is this solution unique?