Quiz 3

Thursday, 14 July 2005

Math 110

Name: _____

1. True or false. If true, explain why; if false, give a counterexample.

   (a) Let r be an elementary row operation and c be an elementary column operation (both acting on $m \times n$ matrices). Then r and c commute; that is, $r(c(A)) = c(r(A))$ for any $m \times n$ matrix A.

   (b) If x, y are solutions of a matrix equation $Ax = b$, then so is $\frac{1}{3}x + \frac{2}{3}y$.

2. Suppose $A \in M_{m\times n}(F)$ has rank 1. Show that there are nonzero matrices $X \in M_{m\times 1}(F)$ and $Y \in M_{1\times n}(F)$ such that $A = XY$.