Name (printed): Solutions

MATH 1010-2: QUIZ 5

September 30, 2010

TO RECEIVE CREDIT FOR YOUR SOLUTIONS ON PROBLEMS 1 AND 2 YOU MUST SHOW YOUR WORK.

1. (6 points) Solve the following system of equations for x, y, and z by any method you choose:

$$\begin{aligned} x + y + z &= 6 \\ y &= 3 \\ 3x + 2y &= 3 \end{aligned}$$

Solution. The system is already in row eschelon form (in a slightly disguised way). Plug $y = 3$ in the third equation and solve for x:

$$3x + 2(3) = 3,$$

and so

$$3x + 6 = 3.$$

Subtracting 6 from both sides and dividing by 3 gives $x = -1$. Finally, plugging $x = -1$ and $y = 3$ in to the first equation gives

$$-1 + 3 + z = 6$$

which quickly leads to $z = 4$. The solution is thus $x = -2, y = 3$ and $z = 4$.

2. (2 points each) Compute the following determinants:

(a) $\det \begin{pmatrix} -2 & 4 \\ 4 & -3 \end{pmatrix} = (-2)(-3) - (4)(4) = 6 - 16 = -10.$

(b) $\det \begin{pmatrix} 2 & 4 \\ 10 & 20 \end{pmatrix} = 2(20) - 10(4) = 40 - 40 = 0.$