

Each problem was worth 20 points, with possible partial credit on 1) and 3). The average was $47/60$, or about 75-80 per cent, which is normal for a Quiz I.

1) Use Gaussian elimination to put the following system into row echelon form. If it is consistent, find the solution set. [If there are free variables, use α notation in your answer.]

$$\begin{aligned}2x_1 + 3x_2 + x_3 &= 1 \\x_1 + x_2 + x_3 &= 3 \\3x_1 + 4x_2 + 2x_3 &= 4\end{aligned}$$

Answer: $S = \{(8 - 2\alpha, \alpha - 5, \alpha)\}$ [see problem 1.2.5e]. It is easy to check your answer by setting $\alpha = 0$ and/or $\alpha = 1$.

2) Answer each part with “True” or “False”.

- a) Every homogeneous linear system is consistent.
- b) Every system in reduced row echelon form is also in triangular form.
- c) Every consistent underdetermined system has infinitely many solutions.
- d) Every system in triangular form has a unique solution.
- e) Every system in triangular form has a nontrivial solution.

Answers: TFFTTF

3) Use the traffic flow diagram [given on the real exam] to make a 2x2 linear system of equations. Do not solve it.

Answer: After simplification, $x_1 - x_2 = 50$ and $x_1 + x_2 = 850$. I gave credit for answers in matrix form, but deducted a few points if the equations were not written in standard form.