

Sample Midterm Test 1

Time: 70 minutes

Instructor:

Dr. Edward Doolittle

Name: _____

Student #: _____

Section: _____

You have 70 minutes to do each of the following questions. The test is worth a total of 60 marks. Non-programmable calculators, logarithm tables, and/or slide rules are permitted; no other aids are permitted. Use the backs of the pages for rough work.

- [10] 1. Solve the system of equations

$$\begin{aligned}x + 3y &= 11 \\2x - 5y &= -22\end{aligned}$$

2. A student club sponsored a dance and charged \$3 admission for students, \$5 for faculty, and \$8 for the general public. Total sales amounted to \$2542. Three times as many students bought tickets as faculty. The general public bought twice as many tickets as did the students.

- [4] (a) Set up the system of equations that determine how many tickets were sold to each group.

[10] (b) Solve the above system.

[1] (c) What was the total number of tickets sold?

- [15] 3. Find the reduced row echelon form of the following matrix:

$$\left[\begin{array}{ccc|c} 1 & 4 & -2 & 7 \\ 2 & 5 & 2 & 2 \\ 0 & 3 & 2 & 5 \end{array} \right]$$

[5] 4. (a) Find the inverse of the matrix

$$\begin{bmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

[5] (b) Check that you have the correct inverse.

- [10] 5. I own a certain number of stock shares in Acme Enterprises, and a certain number in Beta Builders. My stockbroker told me this morning that my shares in Acme were worth \$4 each, and in Beta were \$8 each, for a total of a whopping \$200. Later today he called back to say that the market had crashed and my Acme shares were worth \$2 and my Beta shares \$4. He also told me the net value of my shares, but I knew that he must be mistaken. What might he have said, and how did I know he was wrong?