

Math 254-1 Exam 10: 12/1/8

Please read the exam instructions.

Notes, books, papers, calculators and electronic aids are all forbidden for this exam. Please write your answers on **the attached page only** (front and back if necessary). Indicate clearly what work goes with which problem. Cross out work you do not wish graded; incorrect work can lower your grade. You may use this first page as scratch paper; keep it for your records. Show all necessary work in your solutions; if you are unsure, show it. Extra credit may be earned by handing in revised work in class on Wednesday 12/3; for details see the syllabus. Each problem is worth 10 points; your total will be doubled to fit the standard 100 point scale. You have approximately 30 minutes.

1. Carefully define the term “dependent”. Give two examples in \mathbb{R}^2 .

For the next two problems, consider the matrix $A = \begin{pmatrix} 2 & 1 & -1 \\ 1 & 0 & 2 \\ 0 & 2 & -3 \end{pmatrix}$.

2. Calculate $|A|$ by using the formula for 3×3 determinants.
3. Calculate $|A|$ by expanding on the second column.
4. Solve the linear system $\begin{cases} 2x+y = 5 \\ -2x+y = 1 \end{cases}$ using Cramer’s rule.

5. Find $|B|$, for $B = \begin{pmatrix} 2 & -1 & 0 & 1 & 0 \\ 0 & 0 & 2 & 1 & -1 \\ 0 & 1 & 0 & -2 & 0 \\ 4 & 0 & 1 & 0 & 1 \\ 1 & 1 & -2 & 0 & 3 \end{pmatrix}$.

Please hand in ONLY the second page; keep this first page.

ID Code: _____

Please write all solutions on this page (front and back if necessary).