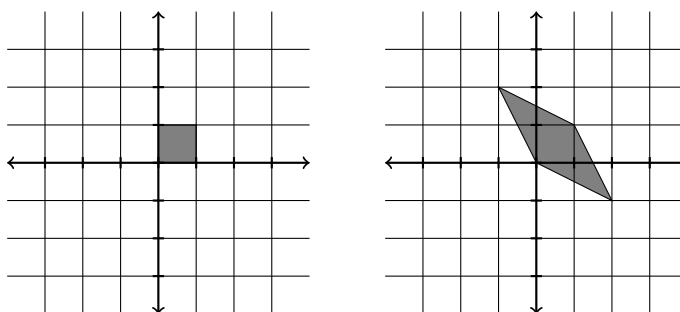


Textbook problems from Stewart *Calculus*, 7th edition:

- §1.8: 8, 19, 20
 - *Note:* In problem 1.8.8, when the authors ask what the smallest possible value of x_8 is, they mean *in order for all flow rates to be nonnegative*. The issue is that the linear system of equations doesn't tell the whole story, because some of its solutions would require negative traffic along some of the (one-way) roads.
- §1.3: 10, 12, 16, 22, 26, 28, 37, 38

Supplemental problems:

1. Find a 2×2 matrix A such that $A \begin{pmatrix} 1 \\ 0 \end{pmatrix} = \begin{pmatrix} 2 \\ 7 \end{pmatrix}$ and $A \begin{pmatrix} 0 \\ 1 \end{pmatrix} = \begin{pmatrix} 1 \\ 5 \end{pmatrix}$.
2. A 2×2 matrix A transforms the unit square in the plane in the manner shown below. Determine the matrix A (there is more than one possible answer; you only need to give one).



3. Let $A = \begin{pmatrix} 1 & 3 \\ 0 & 1 \end{pmatrix}$. Draw a pair of pictures like in the problem above to illustrate the way that the matrix A transforms the unit square.

Important notes:

- Regrade requests must be submitted via Gradescope within *one week of the due date* of the assignment.
- For full credit, you must show or explain your reasoning.
- You are encouraged to work in groups while solving the problems, but all submitted work must be your own work in your own words. Use of solution manuals or online solution databases is plagiarism, and will result in a 0 on the assignment in addition to being reported to Community Standards.

Submission instructions:

Before submitting your assignment scan it to a single pdf file and **view your pdf to make sure that it is clearly legible**. Then submit it as follows.

1. Go to <http://www.gradescope.com> and log in.
2. Select “Math 272” and the appropriate homework assignment, then select “submit pdf.”
3. For each written question, select the pages of your submission where your solution appears.
4. Click submit.