NOTE: Section 5.4 of 5th edition corresponds to Section 5.3 in 4th edition. Other than
that, the problem numbers for this homework correspond to both the 4th and 5th edi-
tions of the book. Students using 4th edition MUST write the 5th edition section and
problem numbers in their HW. Failure to do so may result in getting no credit for that
problem.

• Section 5.2 # 4, 11, 17, 20, 24, 30, 35
• Section 5.4 # 1, 3, 4

In addition to the above problems do the following problem which has 3 parts. This
problem is intended to strengthen your understanding of the column and row based
matrix operations that were taught in class.

Let $B$ be any given $5 \times 4$ matrix to which we want to apply the following operations in
sequence:

- double column 1,
- halve row 3,
- add row 3 to row 1,
- interchange columns 1 and 4,
- subtract row 2 from each of the other rows,
- replace column 4 by column 3,
- delete column 1 (so that the number of columns is reduced by 1).

**Part (a):** Write the above operations performed on $B$ as a product of eight matrices.
That is, each operation above can be written as a matrix. Since there are 7 operations
listed above, along with $B$, that makes for 8 matrices. Make sure your answer is written
as a product of 8 matrices one of which is $B$. Also make sure that you *don’t* carry out
any matrix multiplications in this part of the problem.
Part (b): Write the above sequence of operations again as a product $ABC$ (same $B$) of three matrices.

Part (c): What are the values of matrices $A$, $C$, and $ABC$ for the following $B$ matrix. This time we do want you to carry out the multiplications to form a single matrix $ABC$. The matrix $B$ you should use for this part of the problem is:

$$B = \begin{bmatrix} 1 & 5 & 4 & 3 \\ -9 & 7 & -3 & 5 \\ 6 & -4 & 8 & 2 \\ 2 & 9 & 1 & 7 \\ 3 & 0 & 11 & -6 \end{bmatrix}.$$