Required textbook problems (hand these in):

- §1.7: 6, 9, 12, 15, 16, 17, 18, 19, 20, 24, 27, 28, 33, 34
  Note: in 15–20, “by inspection” means “just by staring at them, without doing any computation”. (i.e., by pure thought.) Do write a brief (one sentence) justification of why the vectors are or aren’t linearly independent.

- §1.8: 1, 4, 10, 12, 13, 14, 15, 16, 29(b,c), 32, 33
  Note: Most of these very quick if you understand what’s going on. In 32 and 33, “show that” means find one of the properties (i), (ii) that is violated by $T$, with specific $\vec{u}$, $\vec{v}$, and/or $c$.

- §1.9: 1, 2, 3, 4, 5, 6, 10, 11, 17, 25, 26, 29

Suggested practice (don’t hand these in):

- Please read and make sure you can do the practice problems in sections 1.7, 1.8, 1.9.
- Please read and use for review problems 1.7.21, 1.7.22, 1.7.29, 1.7.30, 1.7.31, 1.7.32, 1.8.7, 1.8.8, 1.8.21, 1.8.22, 1.9.19, 1.9.23, 1.9.24, 1.9.31, 1.9.32, 1.9.35
- If you had trouble or got help with any of the assigned problems, solve another, similar problem (or two).

Bonus points. As usual, bonus points for learning Sage.

1. Follow the steps in the post “Creating convenient matrices”.
2. Create a length 142 vector whose entries alternate 1, 2, 1, 2, . . . . Do not do this by typing 1, 2 71 times: use operations on lists as explained in the post. Call your vector “v”.
3. Use Sage to verify that if $Z$ is the $3 \times 142$ zero matrix then $Zv$ is the length 3 zero vector.
4. Use Sage to verify that if $I$ is the $142 \times 142$ identity matrix then $Iv = v$. (In a correct solution, your worksheet should output “True” at a certain point.)
5. Extra optional: write a Sage function which takes as input a slope $m$ and returns the $2 \times 2$ matrix representing reflection across the line $y = mx$. (Hint: first figure out by hand what the matrix should be...)

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