References: Linear Algebra

We will mostly utilize the following topics:

- Vector and Matrix arithmetic: addition, subtraction, transposes
- Inner product of vectors, outer product of vectors
- Matrix multiplication (non-commutative!)
- Rank - the implications for a matrix being full-rank or not
- Matrix inverse - not how to calculate it by hand, but conditions needed to invert (square, full-rank) and the conditions for the inverse to be stable (low condition number, determinant not too small)

I highly recommend reading references "on-demand" as you hit specific issues where you have questions.

I do not recommend trying to go through a whole linear algebra textbook--even in areas we discuss, it will have much more than we need.

Still, here are a few textbook references if you would like. I do not rank any of these much higher than the others, and feel free to suggest others.

References

The linear algebra concepts above are standard--you can find many good references for them, including Wikipedia.

Free online textbooks

Boyd, Vandenberghe: Introduction to Applied Linear Algebra (http://vmls-book.stanford.edu/vmls.pdf)

Cherney, Denton, Thomas, Waldron: Linear Algebra (https://www.math.ucdavis.edu/~linear/linear-guest.pdf)

Taipale: Mathematical Preparation for Finance (chapter on Linear Algebra) (https://www.softcover.io/read/bf34ea25/math_for_finance/lin_alg#cha-lin_alg)

Strang: Sample Chapter on Inverses - (https://math.mit.edu/~gs/linearalgebra/ila0205.pdf) *Gilbert Strang's Linear Algebra book is a classic, but not free. The sample above may be helpful on its own, or it may inspire you to seek out his book.*

Free online primers

2023SP

Essence of Linear Algebra (https://www.youtube.com/watch?v=fNk_zzaMoSs&list=RDCMUCYO_jab_esuFRV4b17AJtAw&start_radio=1&rv=fNk_zzaMoSs&t=33)
(YouTube video series)

Brief slides (https://www.byggmek.lth.se/fileadmin/byggnadsmekanik/education/courses/optional/VSMN25/chptr_2_Matrix_Algebra-2012.pdf)

Brief note (https://web.mst.edu/~stutts/SupplementalNotes/LinearAlgebraPrimer4.pdf)