

1A

b. Questions

Overall, this section was very much a review of prior knowledge from calculus and linear algebra. There were a couple of sections I had to read closely and reread a few times, in particular:

1. *Proposition and Definition 1.13* It took me a while to realize what was meant by writing $\mathbf{x} = \mathbf{x}^{\parallel} + \mathbf{x}^{\perp}$. Clearly the parallel component is the projection but for some reason when discussing vectors in \mathbb{R}^n I was expecting to see n components even though this was simply suggesting that any vector \mathbf{x} can be decomposed into a sum of parallel and perpendicular vectors with reference to a second vector \mathbf{y} .
2. *Lemma 1.12 Schwarz Inequality* I was expecting to see the more familiar expression $|\langle u, v \rangle|^2 \leq \langle u, u \rangle \cdot \langle v, v \rangle$. I think I would have been less bothered had the book's definition used the double bar $\|\mathbf{x}\|$ to mean norm because it's weird to think of the norm of an inner product which returns a scalar (although I guess the norm of a scalar α is simply $\sqrt{\alpha^2}$ which is a definition for absolute value...)
3. *Example 1.9 Shortest path between two points* It took me a few rereads to think about why it is sufficient to show $L \geq d$ where d is the straight line distance and not $L > d$.
4. *Inner product* Something I always find interesting is using the inner product to define *angle* in higher dimensional space.

c. Reflections

I first read closely through the section in order to familiarize myself with the material. As I read I circled things I had questions about with pencil. I took note of the examples but didn't work them out in detail and paid close attention to the included proofs. Afterwards I went back through with a highlighter and marked parts I thought were important that weren't already bolded or boxed in the text.

d. Time

It took me approximately an hour and a half to read through the section thoroughly and another half hour to go back and highlight what I thought to be important / interesting information.