- Page 1: the term “composite” is used in contradiction of its technical meaning, and therefore incorrectly
- Page 1: emphasis is placed on “*ordered* pairs”, but the concept is not introduced or defined until much later
- Page 1: incorrect and non-standard set-builder notation is used to describe the cartesian product, “$Y \times B = \{(y, b)\}$”.
- Page 2: no explanation is given for the “functions for retrieving” components
- Cartesian coordinate system excursus: no clear definition of coordinate system was given and what was suggested seems either obviously wrong or misleading to the point of confusion. Frankly, despite years of training, this reviewer could not understand the author’s intents and it is doubtful that any untrained reader could.
- Page 4: “products of numbers” has an established meaning, contradicted by its usage here.

- Page 4: "isomorphic" is used before it is given any meaning.
- The author argues that "geometrical figures" do not form a set, but admits that a "coordinate system" might do so, despite being subject to the same arguments presented. This conversation is very misleading, and indicative of a lack of understanding on the part of the author.
- Page 5: the author says that it is not possible to draw something but then immediately produces figure 2-7 which does depict this very thing.
- Page 5: the discussion about ordered pairs for commutative operations is misleading; that addition is commutative has nothing to do with the fact that its domain of definition is taken to be a product.
- Page 6: "symbolizing" is not a technical term, nevertheless the author uses this to mean something like "encoding" or "specifying semantics".
- Page 9: despite prior references, this is the first time the projection functions of a product are hinted at.
- Page 9: the entire conversation below figure 2-12 is riddled with mathematically important typos, to the point that it is not clear what the author is trying to communicate. Is the discussion about a cartesian product of G and Y or B and Y? It would seem the author is unsure.
- Page 9: use of "random" in place of "arbitrary" or "general" belies the author's lack of background in the subject matter. Similarly so do numerous references to "*the* cartesian product" when the point of these chapters is to argue that there are many, not just one.
- Page 10: undefined/confusing term "converted".
- Page 10: incorrect notation, "$(i) \to b(i) \times y(i)$" belies the author's lack of expertise.
- Page 10: now elements are written using a colon (:) instead of an element sign ($\in$) without warning or explanation.
- Page 11: sums are described as a "relation between sets", this is not true, and an alarmingly false and nonsensical claim.
- Page 11: the author writes "<u>*A*</u> sum of two sets [...] denoted [...]", which is mathematically confusing. If there are many sums, why should they all be denoted the same way?
- Compare figures 2-17 and 2-11, they are identical yet one is introduced in the context of coproducts and the other is introduced in the context of products. The author dangerously does not address this.
- Page 13: the author claims that the sum of two sets may be expressed in terms of functions. This is incorrect, the sum of two sets is by definition a set.
- Page 14: the author claims that the issue with "imposter" sums is that they might contain "additional information". This is only partly true, and an important oversight.

- Page 15: the author claims that "coproduct" is short for "converse product" and introduces the latter as standard terminology. A brief literature search, and six years of experience in the field have not revealed a single source for this term.

- Page 16: both bullet points are misleading to wrong in their mathematical content.

- Page 16: the author suggests that $\wedge$ and $\vee$ take their shapes from the category theoretic diagrams presented here. This is at best a complete historical inversion.

- Page 17: the proof sketched for one of the De Morgan laws is incomplete and misleading in the details it glosses over.

- Page 18: both tables have unlabelled rows, so it was difficult to discern the intent of the author. Nevertheless, to say that category theory doesn't understand "elements" is to admit an incomplete knowledge of the field (last row first column "N/A"). It is difficult to understand why the other two "N/A" appear in the table, or what might have filled their places.

- Page 19: the author states "a programming language can be thought of as [a] category", which if not misleading or wrong is a statement devoid of mathematical meaning.

- Page 19: the author claims that "All category theory books (including this one) starts by talking about set theory." [*sic*]. This is not true (see, for instance, Leinster's *Basic Category Theory*), and risks misinforming the reader.

- Page 20: in the discussion about naming categories for their morphisms instead of their objects, the author brushes aside a subtle topic in category theory. Indeed some categories are best named for their morphisms, but others—such as the category of compactly generated weakly Hausdorff spaces, or commutative monoids, or abelian groups—are fruitfully named for their objects.

- Page 21: in writing "One of the few or *maybe even the only* requirement for a structure to be called a category" the author suggests that categories which do not have identities (know as semi-categories) or those for whom composition is not associative are to be equally considered categories. This is wrong and misleading, and a potentially harmful idea for academically young readers to encounter.

- Page 22: the author's presentation of the composition operation of a category is confused, and winds up having to backtrack to address ambiguity which it introduced just prior. Ultimately, phrases such as "There is *exactly* one morphism that fits these criteria" do more harm than good and will likely confuse even a practitioner for a moment.

- Page 23: beginning here, and for some time, the author uses the term "equivalent" to describe variously differing situations for morphisms. Not only is this one term used in multiple subtly different ways, but it also has an established technical and informal meaning, neither of which are intended in its current employment. This belies a lack of familiarity with the technical devices of category theory.

- Page 43: the author writes "$2 \cong 2+$". This has no established meaning in the context of this document, nor does it have any technical meaning (only objects of a category can be isomorphic) and so is incorrect.