CORRECTIONS TO
Axiomatic Geometry
(Winter/Spring 2010 Edition)
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Corrections posted since 3/15/10 are dated.

- **Page 9, three lines above Playfair's Postulate:** Delete "the" at the end of the line.
- **Page 11, line 8:** Change "Proposition I.10" to "Proposition I.16."
- (5/31/10) **Page 12, lines 6 & 7 from the bottom:** Delete extra "when."
- **Page 14, third line from the bottom:** "because" is misspelled.
- **Page 27, sentence before the section heading:** Replace that sentence with the following: "None of the other models we have introduced so far are isomorphic to each other. If two models have different numbers of points, they cannot be isomorphic because there cannot be a one-to-one correspondence between their points. Other than the 3-point plane and the Amtrak model, the only other two models we've seen that have the same number of points are the Fano plane and the 7-point plane. But these cannot be isomorphic because every line in the Fano plane has three points, while every line in the 7-point plane has two, so there can be no correspondence such that a point lies on a line in one model if and only if the corresponding point lies on the corresponding line in the other."
- **Page 37, paragraph before Theorem 2.20:** Change "horizontal" to "nonvertical."
- **Page 45, line below the truth table:** Change "tbe" to "the." [*Thanks to Elisha Allred.*]
- **Page 48, bulleted list in the middle of the page, second item:** Insert "1" after "$a <$": "$a < 1$ is implied by ... ."
- **Page 61, Problem 3.2(g):** The first "line" should be "lie."
- **Page 65, paragraph after the last two-column proof snippet:** In the third line, change "your are" to "you are."
- **Page 67, third paragraph, second line:** There should be a close quotation mark at the very end of the line, so that sentence reads as follows: ... such as "there exists $x \in D$ such that $Q(x)$," then ... .
- **Page 75, line 6:** Change "prove" to "proof."
- (3/25/10) **Page 75, second paragraph, fourth line:** Change "$\exists x \in D$" to "$\exists x \in D, \ Q(x)$." [*Thanks to David Sprehn.*]
- **Page 79, first paragraph after the section heading:** At the end of that paragraph, add "(See page 23 for the statements of the axioms.)"
- **Page 79, paragraph beginning "1.*Decode ...*":** In the second line, change "Theorem 4.3" to "Theorem 4.2."
- **Page 82, proof of Corollary 4.4:** Add an end-of-proof symbol ($\square$) after the proof.
- **Page 82, three lines after the proof of Corollary 4.4:** Change "Axioms 1 and 2" to "Axioms 2 and 3."
- **Page 83, in the two-column proof:** Change step numbers 12 and 13 to 11 and 12, respectively.
- **Page 93, just above the second set of displayed equations:** Change "points of ℓ" to "points on ℓ."
- (4/3/10) **Page 98, first full paragraph, third line:** Change "three points" to "three distinct points." [*Thanks—again—to David Sprehn. As he pointed out, my previous correction to this paragraph was wrong.*]
- (4/3/10) **Page 112, just before the section heading:** Insert the following corollary. [*Thanks to Lisa Temcov.*]

    Corollary 6.19.1. *Every ray has a unique opposite ray.*

    Proof. Let $\overrightarrow{AB}$ be a ray, and choose a point C such that $C * A * B$ (by the segment extension theorem). Then $\overrightarrow{AC}$ is opposite to $\overrightarrow{AB}$ by Theorem 6.19(e). If r is any other ray opposite to $\overrightarrow{AB}$,

then because $r \cup \overrightarrow{AB} = \overleftrightarrow{AB}$, the point C must be contained in the interior of r, and therefore $r = \overrightarrow{AC}$ by Theorem 6.19(d). $\qquad\square$

- **Page 125, statement of Theorem 7.8(c):** Delete the extra "*If.*"
- **Page 129, second paragraph, second line:** "hypothesis" is misspelled.

(6/5/10) **Page 140, between the two bulleted lists:** "classified" is misspelled.

(5/4/10) **Page 141, proof of Theorem 8.2, first line:** Should read "$\angle CAD$ and $\angle DAB$ are adjacent angles ... ." [*Thanks to Colin Williams.*]

- **Page 130, Theorem 7.17:** The proof of the uniqueness part of this theorem requires the interior lemma (or one of its consequences, such as Theorem 7.26), so it needs to be moved to the very end of the chapter, just before the problems.

(6/1/10) **Page 143, line 17:** Change "in the next chapter" to "in Chapter 12." [*Thanks to Becky Quay.*]

- **Page 168, proof of Theorem 9.17, first line:** Change "equidistant from m" to "on the same side of m and equidistant from m."

(4/11/10) **Page 178, last two lines:** Before the word "ray," insert "interior of the" (twice). [*Thanks to David Sprehn.*]

(4/20/10) **Page 180, line 5 from the bottom:** Insert the missing word "are" in the phrase "Some typical situations *are* illustrated ... ." [*Thanks to Kimberly Waterbly.*]

(4/14/10) **Page 185, just after Corollary 10.13 and its proof:** Insert the following:
Corollary 10.13.1. *Every rectangle is a convex quadrilateral.*
    Proof. A rectangle is a parallelogram by the common perpendicular theorem. $\qquad\square$

(4/14/10) **Page 186, proof of Lemma 10.14, third paragraph, second line:** Should read "the lines $\overleftrightarrow{AC}$ and $\overleftrightarrow{BD}$ would intersect at two points (E and B) ... ." [*Thanks to Natalie Hobson.*]

(4/28/10) **Page 228, first line:** Delete the extra "the." [*Thanks to Kimberly Waterbly.*]

(6/6/10) **Page 263, statements of Theorem 14.13 and Corollary 14.14:** Delete the words "product of the" in both statements. [*Thanks to Molly Olsen.*]

(5/25/10) **Page 298, proof of Theorem 17.5:** In the second line of the proof, just before "Because," insert the following: "Let O be the center of $\mathcal{C}$, and let r be its radius. First consider the case in which $\overline{AB}$ is a diameter, so $AB = 2r$. The point O is certainly an interior point of $\mathcal{C}$. If P is an interior point of $\overline{AB}$ other than O, then either $P \in \text{Int}\,\overline{OA}$ or $P \in \text{Int}\,\overline{OB}$. In the former case, $OP < OA = r$ (the whole segment is greater than the part), so $P \in \text{Int}\,\mathcal{C}$; the proof in the latter case is the same. Now consider the case in which $\overline{AB}$ is not a diameter, so A, B, and O are noncollinear." [*Thanks to Elisha Allred.*]

(5/31/10) **Page 304, proof of Theorem 17.12, second line:** After the first sentence of the proof, insert the following: "Suppose further that A and C have been chosen to lie on $\mathcal{C}$."

(6/6/10) **Page 331, lines 2 and 3 from the bottom:** Change "$\angle A$ and $\angle B$" to "$\angle B$ and $\angle C$."

(5/30/10) **Page 339, paragraph before Lemma 19.6, first line:** Delete extra "of."

(6/5/10) **Page 355, second line from the bottom:** Change "starting and A" to "starting at A." [*Thanks to Iris Hwang.*]

(6/6/10) **Page 38, second line from the bottom:** After "larger angle measure with $\overleftrightarrow{AF}$," insert "than the two asymptotically parallel lines." [*Thanks to Kimberly Waterbly.*]

- **Page C-2, line 10:** Change "*subtracting b from a*" to "*subtracting y from x*."
- **Page E-9, proof of Theorem E-2, first line:** Change "The function f_1 is not injective" to "The function f_1 is not surjective."