



InDesign Accessibility for Complex Math Textbook (Spanish, Algebra Volumes 1 & 2)

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Client

An educational publisher producing mathematics textbooks for middle and high school learners.

Project Scope

- 2-volume Algebra textbook series
- 1,046 pages total
- Language: Spanish
- Output: Fully Accessible PDF exported from Adobe InDesign
- Compliance Goal: WCAG 2.1 AA

Client Challenge

The textbooks included:

- Complex algebraic equations
- Multi-step problem-solving layouts
- Graphs, charts, and instructional diagrams
- Sidebars, callouts, and multi-column formatting

Traditional accessibility remediation approaches struggle with:

- Ensuring **math content is read correctly by screen readers**
- Maintaining logical reading order when layouts contain **floating and layered elements**
- Assigning meaningful alt text to conceptual math visuals (not just decorative ones)
- The client needed accessibility completed **within 4–5 months** while maintaining the **original instructional design and classroom usability**.

Accessibility Workflow & Solution

1. InDesign Semantic Structuring

- Applied consistent paragraph and character styles mapped directly to a semantic heading hierarchy
- Ensured that screen readers could navigate the text in a logical instructional sequence

2. Logical Reading Order: Articles

- Used the Articles panel to restructure page reading flow
- Resolved layout complexity caused by:
 - Multi-column spreads
 - Floating text boxes
 - Sidebars and annotations
- Ensured students using assistive tech experienced the same conceptual flow as sighted readers

3. Alt Text for Instructional Visuals

- Inserted descriptive alt text for all:
 - Graphs and plotted functions
 - Geometry diagrams and visual analogies
 - Step-by-step solution visuals
- Decorative artwork marked as artifacts to reduce screen reader clutter

4. MathML Integration for Equations

- Built equations using tools compatible with MathML export
- Ensured formulas were:
 - Read clearly and consistently by screen readers
 - Navigable one component at a time, supporting learning comprehension

5. Accessible Table Structure

- Identified header rows and applied scope attributes for data tables
- Ensured that students using screen readers could interpret step progressions and instructional tables accurately

6. Metadata and Accessibility Properties

- Added:
 - Document title
 - Language specification (Spanish)
 - Descriptive keywords and structure attributes
- Ensured proper document identity and assistive tech detection

Testing & Quality Validation

Validation Method	Purpose
NVDA Screen Reader Testing	Tested fixed-layout visual rendering + text-to-speech playback
Adobe Acrobat Accessibility Checker	Ensured accurate reading order and alt text narration
Manual Review of Multi-Column Pages	Verified WCAG 2.2 AA contrast compliance

Results

Outcome	Impact
1,046-page accessible textbook delivered in 4 months	Met academic calendar and publishing release deadlines
Complex math content became screen-reader interpretable	Supported independent learning for visually impaired students
Layout and instructional design were fully preserved	No loss of pedagogical clarity or page design integrity
Accessibility workflow standardized for future math titles	Enables scalable repeat projects without re-engineering production

Conclusion

This project demonstrates that **highly structured, math-heavy educational materials can be made fully accessible without compromising instructional layout**. By combining structured InDesign practices, MathML-based equation encoding, and careful reading order design, the final accessible PDF provides an equitable, academically accurate learning experience for students using assistive technologies.



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