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List of Exercises

I hope the telegraphic descriptions given below will help you recall in most cases roughly what the exercises are. When they don't, you can always look back to the page in question (shown at the left). If you find any of the descriptions incorrect, or think of a more effective wording to briefly describe some exercise, let me know.

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Symbol Index

Boldface numbers indicate pages where definitions are given. If a symbol is defined in one place and used again without explanation more than a page or so away, I show the page(s) where it is defined, and often some of the pages where it is used or where the entity it symbolizes is discussed; but I do not attempt to show all significant occurrences of each subject. For that, the Word Index, with its headings and subheadings, is more useful.

Symbols are ordered alphabetically. For Greek letters, I use their Latin spelling, e.g., "Omega" for Ω. Other symbols are alphabetized in various ways; e.g., $\vee$ and $\wedge$ are alphabetized as "vee" and "wedge" based on their LaTeX names; the symbol $=$, and related symbols such as $\cong$, are alphabetized, in an arbitrary order, under "equals"; and $\mapsto$ and $\downarrow$ are similarly alphabetized under "arrow". Fortunately, you do not have to know all the details; some symbols will require more search than others, but this index is only a few pages long.

Font-differences, capitalization, and "punctuation" such as brackets, do not affect ordering unless everything else is equal. Operator-symbols are often shown in combination with letters with which they are commonly used, e.g., $\langle X \mid Y \rangle$ is alphabetized under XY.

Category theory, introduced in Chapter 6, brings with it a proliferation of symbols for categories. I do not record below cases where the meaning is obvious, like **Group**, nor cases discussed only briefly, like **GermAnal** (germs of analytic functions, which can be found in the Word Index), but only category names used in more than one place, for which some aspect of the definition (e.g., the associativity assumption in $\mathbf{Ring}^1$) or the abbreviation (as with **Ab**) is not obvious.

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Word and Phrase Index

I have tried to include in this index not only the locations where terms are defined, but also all significant occurrences of the concepts in question; but it has not been easy to decide which occurrences are significant. I would welcome readers' observations on the types of cases they would find it useful to have in the index, and on entries that are erroneous, unnecessary, or missing.

Pages where terms are defined or where conventions are made relating to them are shown with boldface page numbers. (Sometimes a formal definition occurs after the first page of discussion of a topic, and sometimes more than one version of a concept is defined, leading to occasional entries such as 172-**173**-**187**-234.)

Terms used by other authors for which different words are used here are, if referenced, put in single quotes; e.g., 'free product', for what we call a coproduct.

In cross-references, I often truncate multiword entries; e.g., I may say "*see* rings" though the actual heading is "rings and k-algebras". But where this would be confusing, I add "...". E.g., under "associative algebra" I write "*see* rings ...".

In referring to secondary headings, I use a colon, writing "*see* main-heading: subheading". Within subheadings, the main current heading is abbreviated "–". In particular, "*see* –: subheading" points to another subheading under the current main heading.

In the few cases where an entry ends with a numeral (e.g., "matrices: with determinant 1"), I have put the numeral in double quotes, so that it cannot be mistaken for a page number.

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