In the examples below, red is bad and green is good.

1. IMPORTANT THINGS

(1) If a claim does not follow immediately from the previous sentence alone, explain what
it does follow from.
   • Combining the previous two sentences shows that...
   • By Lemma 8.3, ...

(2) If a sentence contains more than one claim, make clear which reason is the justification
for each claim. For example, in a chain of equalities, make clear which reason explains
which equality. Sometimes this can be effected by placing a reason before or after the
chain of equalities, or by using \begin{align*} \end{align*}
with a reason at the
right in each line.

(3) A reader reaching the period of a sentence should know why each claim up to that point
is true. If a claim is made whose proof will come only after the period, indicate this
by ending the sentence with something like “as we now explain”, or put the claim into a
formal construction like \begin{lemma} \end{lemma} \begin{proof} \end{proof}.

(4) Break up long arguments by making parts of them into lemmas, even if the lemmas
are used only once. The goal is to minimize what a reader must keep in mind at one
time.

(5) If a section contains several theorems, propositions, and lemmas, but only one of them
is needed in subsequent sections, mention this. (Again, this can free up memory in
the reader’s brain!)

(6) Make quantifiers unambiguous: instead of writing
   \begin{itemize}
   \item We have $x^2 + 1 \in S$ for $x \in \mathbb{R}$ or worse We have $x^2 + 1 \in S$, $x \in \mathbb{R}$.
   \end{itemize}

write one of
   \begin{itemize}
   \item We have $x^2 + 1 \in S$ for all $x \in \mathbb{R}$.
   \item We have $x^2 + 1 \in S$ for some $x \in \mathbb{R}$.
   \end{itemize}

(7) Proofs should usually indicate where the hypotheses are being used.

(8) When citing a book or article, include a theorem number or page number. (This
should be omitted only in cases in which you really mean to cite the entire work.)

(9) When citing an arXiv preprint, include the version number or precise date. (This way,
even if a new version is uploaded, the reader can figure out what you were referring
to.) When citing a preprint elsewhere on the web, give the URL and date of the
manuscript or date downloaded.

(10) Cite “forthcoming work” only if there is a publicly available preprint. (The reason
is that sometimes the work ends up not appearing for years or does not appear at
all, and the announcement serves to discourage others from working on the problem,
which can be damaging to the field.)

2. Other things

(11) Keep theorem statements short. Definitions should precede the theorem in which they
are used.

(12) Keep sentences short. Combine sentences (with “, and” or with a semicolon) only if it
helps to clarify the logic or if the sentences are otherwise closely related.

(13) The introduction to an article should get to new and interesting theorems as soon
as possible. It is OK to postpone definitions to a later “Notation” section (and to
refer readers in the introduction to this later section) if those definitions are standard
enough that most readers will be able to read the introduction without them.

(14) Start induction arguments with base case \( n = 0 \) instead of \( n = 1 \) if it is easier.

(15) Do not use abbreviations like WLOG, iff, and s.t. (Those are for blackboard use only,
if at all.)

(16) Do not use logical symbols such as \( \exists \) and \( \forall \), unless you are writing about formal logic
and they appear in a logical formula. Instead, write out \( \exists \) as “there exists” (or “there
exist”), and so on. See [CMOS, 12.5].

(17) The subject of a sentence or clause cannot consist of words outside a formula together
with a fraction of the formula. Example: Instead of

\[
\text{For a quadratic polynomial } ax^2 + bx + c, \text{ the discriminant } \Delta = b^2 - 4ac.
\]

in which the subject is “the discriminant \( \Delta \)”, write

\[
\text{For a quadratic polynomial } ax^2 + bx + c, \text{ the discriminant } \Delta \text{ equals } b^2 - 4ac.
\]

(18) Do not start a sentence with a symbol [CMOS, 12.7]. For example, “\( H \) denotes the
Sylow \( p \)-subgroup of \( G \).” should not appear as a full sentence.

(19) Avoid contractions such as “don’t” in formal writing.

(20) Usually when people write that something is “clear”, it is because they do not know
the proof or could not think of a good way of writing it (and sometimes this is because
the statement is wrong!) If it really is clear, it is not necessary to say that it is clear.
If it is not clear (or even if it is), then try to say a few words to give the reason.

(21) Minimize use of the “, where . . .” construction, in which explanations of notation come
after the notation is used. Instead, define variables before they are needed.

(22) Refer to theorems by number instead of writing “the previous theorem”, “the proposition
above”, and the like.

3. \LaTeX\ issues

(23) Use a single numbering system for all theorems, lemmas, etc., instead of having both
a Theorem 1.1 and a Lemma 1.1 in the same paper. This makes statements easier to
find, and can help prevent citation errors. \LaTeX can do this for you: one solution is to put
\begin{verbatim}
\newtheorem{theorem}{Theorem}[section]
\newtheorem{lemma}{Theorem}[Lemma]
\newtheorem{corollary}{Theorem}[Corollary]
\end{verbatim}
in your preamble. (This presumes that you are using amsart or some other AMS document class; otherwise precede all this with \usepackage{amsthm} in your preamble.)

(24) To get $\text{Gal}(L/K)$ instead of $\text{Gal}(L/K)$, put \DeclareMathOperator{\text{Gal}}{Gal} once in the preamble and \text{Gal} in the body of the paper each time you need it. (This presumes that you are using amsart or some other AMS document class; otherwise precede all this with \usepackage{amsmath} in your preamble.)

(25) Use \hfill before \begin{enumerate} if necessary, to prevent misalignment of the first item as in
\begin{enumerate}
\item First statement.
\item Second statement.
\item Third statement.
\end{enumerate}

(26) Instead of $f : X \to Y$, use $f \colon X \to Y$ for appropriate spacing. Compare $f : X \to Y$ and $f: X \to Y$.

(27) Try \usepackage{fullpage} in the preamble to fit more on a page without having to set margins manually.

(28) Try \usepackage{microtype} just before your \begin{document} to allow \LaTeX to adjust spacing between characters to reduce the number of bad line breaks.

(29) Finally, if you have mastered everything else, try \usepackage{colonequals} in the preamble and \colonequals as needed in the body. Compare := and \colonequals carefully!!!

4. Nitpicks

(30) The difference between “so that” and “such that” is that the former conveys purpose. If replacing an instance of “so that” with “in order that” makes it sound wrong, you probably should have written “such that”. Example: Do not write “An abelian group is a group so that every two elements commute.”

(31) If you are trying only to indicate a logical implication between statements A and B, write “A, so B” instead of “A, so that B” or “A, and so B”.

(32) The word “only” should be placed as close as possible to the word it is modifying. See [Kil07] for examples.

(33) When referring to a theorem (or proposition or section or ...) by number, capitalize the word “Theorem”.
\begin{itemize}
\item “By Section 3.4 and Theorem 5.6, the proposition holds.”
\item “By Faltings’s theorem, $X(\mathbb{Q})$ is finite.”
\end{itemize}

(34) Displaying a formula does not change the punctuation required. Thus, instead of
\begin{quote}
By Theorem 3.2, we have:
\end{quote}
\[ \text{Gal}(L/K) \simeq \mathbb{Z}/2\mathbb{Z} \times \mathbb{Z}/2\mathbb{Z} \]
By Theorem 3.2, we have

$$\text{Gal}(L/K) \simeq \mathbb{Z}/2\mathbb{Z} \times \mathbb{Z}/2\mathbb{Z}.$$