

Mathematical writing seems to be particularly prone to run-on sentence errors. Perhaps this is because of the complexity of the ideas that need to be expressed (although complexity alone does not make a sentence run-on; see below). Perhaps it's just because people who are writing mathematics often tend to focus more on the mathematical content than the mechanics of communication. In any case, poor mechanics will impede effective communication, so it is worth learning what run-on sentences are and how to avoid them.

COMBINING CLAUSES INTO SENTENCES

A *clause* is a part of a sentence that has its own subject and verb, and could stand on its own grammatically as a complete sentence.

There are basically only two legitimate ways to combine clauses into a sentence:

1. **With a conjunction.** There are two main types:

- **Coordinating conjunctions:** *and, or, but, so, for* (meaning “because”), *yet* (meaning “but”), *nor* (joining two negative clauses). (If you like acronyms, remember FANBOYS.) These connect clauses of equal status (called *independent clauses*), which could be broken into two separate sentences without substantially changing the meaning. Usually, but not always, there will be a comma preceding the conjunction.

The number x is nonzero, so its square is positive. ← RIGHT

The number x is nonzero and its square is positive. ← RIGHT

- **Subordinating conjunctions:** *after, although, as, because, before, if, since, though, when, whenever, where, whereas, wherever, while, unless, and until* are some of the most common ones. These are used to introduce clauses whose meaning depends on the rest of the sentence (called *dependent clauses*). The conjunction and the rest of the sentence are essential to understanding what the clause means. Subordinating conjunctions are sometimes accompanied by commas.

The square of x is positive because x is nonzero. ← RIGHT

The square of x is positive, although x is negative. ← RIGHT

A dependent clause (with its subordinating conjunction) can also come *before* the main clause. In such cases, the dependent clause is always set off by a comma:

Because x is nonzero, its square is positive. ← RIGHT

Although x is negative, its square is positive. ← RIGHT

2. **With a semicolon (;).** Two independent clauses can be connected with a semicolon alone. In this case, no conjunction is used.

The number x is nonzero; its square is positive. ← RIGHT

RUN-ON SENTENCES

Any other way of joining two clauses together yields a run-on sentence. Note that whether a sentence is run-on or not has nothing to do with its length or complexity; it depends only on its structure.

Here are some common types of run-on sentences:

A. The straight run-on:

The simplest kind of run-on sentence, though probably the least common, is just two independent clauses smooshed together with no conjunction or punctuation intervening.

The number x is nonzero its square is positive. ← WRONG

Here “The number x is nonzero” and “its square is positive” are independent clauses, because each can stand on its own as a complete sentence without changing the meaning. Most readers recognize immediately that something is missing in this example.

B. The comma splice:

A more common mistake is using a comma alone, without a conjunction, between two clauses.

Let x be a nonzero real number, its square is positive. ← WRONG

Since the two phrases being joined are complete clauses, they can’t be joined by a comma alone.

C. The “fake conjunction”:

This is a more subtle error, and therefore much more common. Certain words—such as *also*, *besides*, *consequently*, *finally*, *for example*, *furthermore*, *hence*, *in fact*, *however*, *indeed*, *moreover*, *nevertheless*, *otherwise*, *then*, *therefore*, and *thus*—look and act in many ways like conjunctions, but in fact they’re just adverbs. (Technically, they’re called **conjunctive adverbs**.) If one of these is used between two clauses, it must be preceded by a semicolon, because there is no conjunction. Alternatively, a conjunctive adverb can be used to begin a new sentence.

The set A is empty however B is not. ← WRONG

The set A is empty, however B is not. ← WRONG

The set A is empty; however, B is not. ← RIGHT

The set A is empty. However, B is not. ← RIGHT

Let x be a nonzero real number then its square is positive. ← WRONG

Let x be a nonzero real number, then its square is positive. ← WRONG

Let x be a nonzero real number; then its square is positive. ← RIGHT

Let x be a nonzero real number. Then its square is positive. ← RIGHT

This mistake with “then” is especially common in mathematical writing. One reason is probably because people see an analogy with the following:

If x is a nonzero real number, then its square is positive. ← RIGHT

This is not a run-on sentence. The difference is that the phrase “If x is a positive real number” is a dependent clause introduced by the subordinating conjunction *if*. It can’t stand on its own as a sentence, so it’s not an independent clause.

If you’re not sure whether you’re looking at a dependent clause introduced by a subordinating conjunction or an independent clause introduced by a conjunctive adverb, try this test: if the clause can be moved to the beginning of the sentence, it’s a dependent clause; if it can’t, it’s probably an independent clause and needs a conjunction or a semicolon.

The square of x is positive, although x is negative. ← RIGHT

Although x is negative, its square is positive. ← RIGHT

The square of x is positive, nevertheless x is negative. ← WRONG

Nevertheless x is negative, its square is positive. ← WRONG

The square of x is positive; nevertheless x is negative. ← RIGHT