Mathematical Writing Tips

Use of the Colon and "Such That"

Use of the colon. Generally a colon should not be used to set off an equation, even when it is a displayed equation. Typically an equation is the object in a sentence.

Wrong. Relative to the basis **T** and **N** the acceleration is given by:

$$\mathbf{a} = \frac{d^2s}{dt^2}\mathbf{T} + \kappa\left(\frac{ds}{dt}\right)^2\mathbf{N}.$$

Right. Relative to the basis **T** and **N** the acceleration is given by

$$\mathbf{a} = \frac{d^2s}{dt^2}\mathbf{T} + \kappa\left(\frac{ds}{dt}\right)^2\mathbf{N}.$$

Wrong. The general quadratic equation is: $ax^2 + bx + c = 0$.

Right. The general quadratic equation is $ax^2 + bx + c = 0$.

Wrong. Computing the derivative of $f(x) = x^2$ we have: $f'(x) = 2x$.

Right. Computing the derivative of $f(x) = x^2$ we have $f'(x) = 2x$.

English comparison.

Wrong. Today I think I will go to: the store.

Right. Today I think I will go to the store.

Use a colon on occasion for emphasis, but make sure it fits grammatically.

Right. The verdict came quickly: guilty.

Right. Given $f(x) = x^2$, we compute the derivative: $f'(x) = 2x$.

Right. Relative to the basis **T** and **N** we get a nice formula for acceleration:

$$\mathbf{a} = \frac{d^2s}{dt^2}\mathbf{T} + \kappa\left(\frac{ds}{dt}\right)^2\mathbf{N}.$$

Use of "such that." The phrase "such that" usually means the same thing as "with the property that," and is used to specify additional properties that an object must satisfy. It almost always follows "there is," "there exists," or "let."

Right. If P and Q are distinct points, there is a unique line L such that P and Q lie on L.

Right. Let x be the positive number such that $x^2 = 2$.

Right. For every $\epsilon > 0$ there exists a $\delta > 0$ such that $|x - 3| < \delta$ implies $|x^2 - 9| < \epsilon$.

Right. Given a number $L > 0$, let n be the smallest integer such that $n > \sqrt{L}$.

Wrong. We take the derivative of $f(x) = \sin x^2$ with respect to x such that $f'(x) = 2x \cos x^2$.

Right. We take the derivative of $f(x) = \sin x^2$ with respect to x obtaining $f'(x) = 2x \cos x^2$.

Right. Taking the derivative of $f(x) = \sin x^2$ we get $f'(x) = 2x \cos x^2$.

Right. The derivative of $f(x) = \sin x^2$ is $f'(x) = 2x \cos x^2$.