

The mathematical formatting does not suit plain text:

$$\textit{This is plain text in math mode.} \tag{1}$$

You have to switch back to text mode inside the math environment:

$$\text{This is plain text in math mode.} \tag{2}$$

This can be useful in equations incorporating comments, explanations, etc. :

$$f(x) = \{ \text{ 1 if } x \text{ is odd, 0 if } x \text{ is even.} \tag{3}$$