18.904 Written Report

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Contents

1 Introduction

I would like to introduce my favourite topic in algebraic topology.

2 The first part of my report

You may want to use definitions, propositions, lemmas, corollaries, examples, remarks or theorems.

Definition 2.1. *The fundamental group* $\pi_1(X)$ *is defined...*

Sometimes expressions such as $x^2 + y^2 \leq 1$ fit well in the flow of the sentence, but often we prefer to display important or large equations more prominently:

$$\Gamma(z) = \int_0^\infty t^{z-1} e^{-t} dt. \tag{2.2}$$

Of course not every equation must be numbered:

$$\Gamma(z)\Gamma(z + \tfrac{1}{2}) = 2^{1-2z}\sqrt{\pi}\ \Gamma(2z).$$

Not all results are important enough to call *theorems*; that's why we have propositions:

Proposition 2.3. *The Gamma function* (2.2) *satisfies the following identities:*

$$\Gamma(1-z)\Gamma(z) = \frac{\pi}{\sin(\pi z)} \tag{2.4}$$

$$\Gamma(z+1) = z\Gamma(z). \tag{2.5}$$

Note that I referred to equation (2.2). I did this by labeling the equation.

3 The second part of my report

Theorem 3.1. *For any $n \in \mathbb{N}$, The Gamma function satisfies the equation*

$$\Gamma(n+1) = n! \tag{3.2}$$

Proof. Since $\Gamma(1) = \int_0^\infty e^{-t}dt = 1$, we use Equation (2.5) to obtain the result by induction. □

For more information, see the reference [1]. For more information concerning LaTeX, consult Google.

References

[1] Philip J. Davis, *Leonhard Euler's Integral: A Historical Profile of the Gamma Function,* Am. Math. Monthly 66, 849-869 (1959)