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Intro To Very Special Math MATH123

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1 Some section

1.1 Some subsection

1.1.1 Some subsubsection

Definition 1.1 (*Composite*)

*Given $f : A \to B$ and $g : B \to C$, the **composite** $g \circ f$ of f and g is the function $g \circ f : A \to C$, defined by the equation $(g \circ f)(a) = g(f(a))$. The rule of this composition:*

$$\{(a, c) \,|\, \textit{For some } b \in B, f(a) = b \textit{ and } g(b) = c\}$$

Using the si-unit package, big numbers look pretty nice, 1×10^{-10}.

Lemma 1.1

Two equivalence classes are either disjoint or equal.

2 Appendix

Lemma 1.1

Two equivalence classes are either disjoint or equal.

Proof Proof of Lemma 1.1 : Let E be the equivalence class determined by x and E' the equivalence class determined by x'. Assume $E \cap E' \neq \varnothing$, and take $y \in E \cap E'$. By definition of equivalence classes, $y \sim x$ and $y \sim x'$.

By the property of symmetry, $x \sim y$, and by transivity, $x \sim x'$. Thus, $x \in E'$, and it follows that since $x \in E$, $E \subset E'$. The same logic applies in the other direction, such that $E' \subset E$, and thus $E = E'$.