Math notes

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Contents

1 Number Theory

Theorem 1.1 *lmao*

2 Function

There are 3 kinds of function in H3 Math: **Injective**, **Surjective** and **Bijective**.

Definition 2.0.1 ***Injective****: A function $f : X \to Y$ is injective if $f(x_1) = f(x_2)$ implies $x_1 = x_2$ for all $x_1, x_2 \in X$.*

Definition 2.0.2 ***Surjective****: A function $f : X \to Y$ is surjective if $\forall y \in Y$ implies there exists $x \in X$ such that $f(x) = y$.*

Definition 2.0.3 ***Bijective****: A function $f : X \to Y$ is bijective if f is both injective and surjective.*

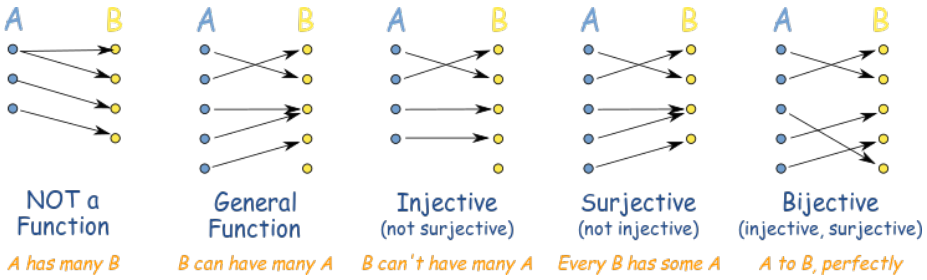

Figure 1: Injective, Surjective and Bijective

3 Inequality

There are 3 ways to solve inequality

3.1 substitution

Some example is $abc = 4(a + b)$, find the minimum value of $a + b + c$.

3.2 齐此化

A simple example is given that $x > 0, y > 0, x + 2y = 1$, what is the smallest value of $\frac{(x+1)(y+1)}{xy}$.