Elementary Number Theory: Number Theoretic Functions

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1 The Sum and Number of Divisors

- Given $n \in \mathbb{N}$, let $\tau(n)$ denote the number of positive divisors of n and let $\sigma(n)$ denote the sum of these divisors.
- A number theoretic function f is said to be multiplicative if $f(mn) = f(m)f(n)$, whenever $\gcd(m, n) = 1$.
- **The functions τ and σ are both multiplicative.** *Proof:*

2 The Möbius Inversion Formula

3 The Greatest Integer Function

- Let $x \in \mathbb{R}$. $[x]$ denotes the largest integer less than or equal to x. So $[x]$ is the unique integer satisfying $x - 1 < [x] \leq x$.
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