

# SETS WITH PRESCRIBED UPPER AND LOWER WEIGHTED DENSITIES

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## Abstract

Let  $f : \mathbb{N} \rightarrow (0, \infty)$  be a weight function such that the conditions

$$\sum_{n=1}^{\infty} f(n) = \infty,$$
$$\lim_{n \rightarrow \infty} \frac{f(n)}{\sum_{i=1}^n f(i)} = 0$$

are satisfied.

For  $A \subset \mathbb{N}$  and  $n \in \mathbb{N}$  denote  $A_f(n) = \sum_{a \in A, a \leq n} f(a)$  and define

$$\underline{d}_f(A) = \liminf_{n \rightarrow \infty} \frac{A_f(n)}{\mathbb{N}_f(n)} \quad \bar{d}_f(A) = \limsup_{n \rightarrow \infty} \frac{A_f(n)}{\mathbb{N}_f(n)}$$

the lower and upper  $f$ -densities of  $A$ , respectively.

We present relations between weighted densities determined by weights  $f(n)$  and  $g(n)$  where

$$\lim_{n \rightarrow \infty} \frac{\frac{g(n)}{\sum_{i=1}^n g(i)}}{\frac{f(n)}{\sum_{i=1}^n f(i)}} = p > 1.$$