COMBINATION2

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ProblemI. Caculate $\mu(20), \mu(105), \mu(210),$.

Solution. Since $20 = 2^2 \times 5$, $105 = 3 \times 5 \times 7$, $210 = 2 \times 3 \times 5 \times 7$, so $\mu(20) = 0, \mu(105) = -1, \mu(210) = 1$. □

ProblemII. Caculate the arithmetic function defined by $\sum_{d|n} g(d) = 5$

Solution.

$$g(n) = \begin{cases} 5, n = 1 \\ 0, n \neq 1 \end{cases} \tag{1}$$

When $n = 1$, $\sum_{d|n} g(d) = g(1) = 5$ $\forall n > 1$, $n = \prod_{i=1}^{s} p_i^{l_i}$, where p_i is prime, $\forall i = 1, \cdots, s$, $l_i \in \mathbb{N}_+$. So $\forall d|n$, $d > 1$, then $g(d) = 0$, so $\sum_{i=1}^{s} g(d) = g(1) = 5$. □