Mathematical
Inequalities
& Applications
Volume 16, Number 3 (2013), 843–849

doi:10.7153/mia-16-64

REMARKS ON THE NUMBER OF PRIME DIVISORS OF INTEGERS

MEHDI HASSANI

Abstract. In this paper, we obtain explicit bounds for sums $\sum_{k\leqslant n}\omega(k)$ and $\sum_{k\leqslant n}\Omega(k)-\omega(k)$, where $\omega(k)$ denotes the number of distinct prime divisors of k, and $\Omega(k)$ denotes the total number of its prime divisors. Moreover, we give some better explicit bounds for the sum $\sum_{k\leqslant n}\omega(k)$ under assumption of the Riemann hypothesis.

Mathematics subject classification (2010): 11A41, 11A25, 26D20.
Keywords and phrases: Primes, arithmetic functions, inequalities.

REFERENCES

[1] R. L. DUNCAN, *A class of additive arithmetical functions*, Amer. Math. Monthly **69** (1962), 34–36.
[2] S. R. FINCH, *Mathematical constants*, Encyclopedia of Mathematics and its Applications, **94**, Cambridge University Press, Cambridge, 2003.
[3] G. HARDY AND S. RAMANUJAN, *The normal number of prime factors of a number* n, Quart. J. Math. **48** (1917), 76–92.
[4] M. HASSANI, *Factorization of factorials and a result of Hardy and Ramanujan*, Mathematical Inequalities & Applications, **15**, 2 (2012), 403–407.
[5] J. B. ROSSER & L. SCHOENFELD, *Approximate Formulas for Some Functions of Prime Numbers*, Illinois J. Math. **6** (1962), 64–94.
[6] L. SCHOENFELD, *Sharper Bounds for the Chebyshev Functions* $\theta(x)$ *and* $\psi(x)$. *II*, Math. of Computation **30**, 134 (April 1976), 337–360.