

It suffices to show that for any prime  $p$ , the highest power of  $p$  dividing the numerator is not less than that dividing the denominator. By the first part, this is equivalent to

$$(*) \quad \sum_{k=1}^{\infty} \left[ \frac{m}{\alpha(p^k)} \right] \geq \sum_{k=1}^{\infty} \left[ \frac{r}{\alpha(p^k)} \right] + \sum_{k=1}^{\infty} \left[ \frac{m-r}{\alpha(p^k)} \right] .$$

But the elementary inequality  $[x+y] \geq [x] + [y]$  shows that

$$\left[ \frac{m}{\alpha} \right] \geq \left[ \frac{r}{\alpha} \right] + \left[ \frac{m-r}{\alpha} \right] ,$$

implying (\*) and the result.

Also solved by M. Yoder.

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[Continued from page 30.]

6. G. H. Hardy and E. M. Wright, An Introduction to the Theory of Numbers, Oxford, 1930, fourth ed., 1960.
7. O. Wyler, "On Second-Order Recurrences," Amer. Math. Monthly, 72, pp. 500-506, May, 1965,
8. D. D. Wall, "Fibonacci Series Modulo  $m$ ," Amer. Math. Monthly, 67, pp. 525-532 (June 1960).
9. R. P. Backstrom, "On the Determination of the Zeros of the Fibonacci Sequence," Fibonacci Quarterly, Vol. 5, pp. 313-322, December, 1966.

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