Math Problem of the Fortnight

Fermat Prime Times

The only known Fermat primes are $3, 5, 17, 257, 65537$. Find the sum

$$1 + \frac{1}{3} + \frac{1}{5} + \frac{1}{9} + \frac{1}{15} + \frac{1}{17} + \frac{1}{25} + \frac{1}{27} + \frac{1}{45} + \frac{1}{51} + \frac{1}{75} + \frac{1}{81} + \frac{1}{85} + \cdots$$

of the reciprocals of all integers whose only prime factors are these five Fermat primes.

The Problem of the Fortnight is open to all undergraduate students, regardless of major. Submit your written solution, along with your name and e-mail address, to the Math Department office (Avery Hall 203) by 2:00 p.m. on Friday, November 19, 2010. The best solution(s) will win gift certificates to the UNL Dairy Store; the best solution(s) will be available in Avery 344 starting Monday, November 22.

There was 1 correct solution to last week's problem. Congratulations to Ryan Hotovy.

For more details, visit the Math Club page at

`http://www.math.unl.edu/~math-club/`