
Problem of the Week

Number Four

September 25, 2017

There is an old saying that all roads lead to Rome. It reminds us that often, many courses of action will lead to the same result.

The mathematical version might involve the many routes to the number 10. Just consider: The number 10 is the sum of the first four whole numbers:

$$1 + 2 + 3 + 4 = 10.$$

The first three prime numbers sum to 10:

$$2 + 3 + 5 = 10.$$

The squares of the first two odd numbers?

$$1^2 + 3^2 = 1 + 9 = 10.$$

How about factorials? (Recall that $0! = 1$ by definition.)

$$0! + 1! + 2! + 3! = 1 + 1 + 2 + 6 = 10.$$

That's quite a gravitational pull for one number.

And speaking of Rome, why is algebra so easy in Italy? Because in Roman numerals, X always equals 10! Ha!

Now have a go at our latest ten-themed problem:

Find the smallest positive integer n with the property that 1500 divided by n leaves a remainder of 10.

When you think you have the problem figured out, follow the instructions below.

*Submissions are due to Jason Rosenhouse by 5:00 on **Friday, September 29**. Solutions, complete with a brief explanation, should be written on the back of an official POTW hand-out. Place your name, e-mail address, and the section numbers and professors of any math courses you are taking, in the **upper right corner** of the front of the page. One weekly winner will receive a five-dollar gift card from Starbucks. Solutions will be posted at the POTW website:*

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