# Re: Sieve distinction, prime counting

***Source:*** http://sci.tech−archive.net/Archive/sci.math/2005−03/1107.html

---

*mm_at_nowhere.net*
***Date:*** 03/03/05

```
Date: Thu, 03 Mar 2005 10:05:42 +0100
```

jstevh@msn.com wrote:

*> A key point that needs to be understood to get at why my prime counting*
*> discovery is important is how it's a big deal that it is fully*
*> recursive without needing to be given primes.*

And that's a big difference with the original Legendre formula?
That's clear, either you are a liar or you understand nothing,
maybe both.

*> Basically what I have is*
*>*
*> p(x,y) = floor(x) − S(x,y) − 1*
*>*
*> where S(x,y) is the sum of the dS(x,k) function where*
*>*
*> dS(x,k) = (p(x/k, k−1) − p(k−1, sqrt(k−1)))(p(k,sqrt(k) − p(k−1,*
*> sqrt(k−1)))*
*>*
*> and you can just pick some natural number x, like 100, and follow that*
*> formula and out will come the answer 25.*
*>*
*> So the complete math form doesn't require you do much of anything but*
*> follow the mathematical formula which directs you.*
*>*
*> However, for sieves, you can't just follow a formula but you also have*
*> to give it more information, like for Legendre's Formula, you need to*
*> have the list of primes up to the square root of 100, or it won't work.*
*>*
*> So you have to tell the sieve function that 2, 3, 5 and 7 are primes,*
*> and then it can count out for you that there are 25 primes up to 100.*
*>*
*> The "intelligence" you might say of my discovery that allows it to*
*> figure out that those numbers are prime without you telling it is in*
*>*
*> (p(k,sqrt(k) − p(k−1, sqrt(k−1)))*
*>*
*> which equals 0 if k is composite and 1 if k is prime, so it's a logic*

> *circuit.*

Once more, you just prove how your knowledge in math is
incredibly low. The function that is equal to 0 or to 1
depending on the fact that an element belongs or not to
a given set exists. But, of course, it has an other name
than the one you are giving it (try a Google search with
"Characteristic function").

> *It gives 1, which is true, if k is prime, and 0, as in false, if k is*
> *composite.*
>
> *So built into my prime counting function is a logical switch that flips*
> *on or off automatically based on whether or not k is prime, which is*
> *not seen in anything else in mathematical history.*
>
> *It's just extraordinary, and no one can point to anything even like it*
> *in this area.*

Extraordinary. Establishing the primality of X by computing the
difference pi(X) − pi(X−1) is absolutely extraordinary.

> *Now that logical switch*

You mean 'characteristic function'?

> *does slow it down, so if you want to count*
> *fast, you can speed it up by yourself telling it whether or not k is*
> *prime versus letting the mathematical function find out by recursion.*
>
> *Then it becomes a sieve as you're giving it more information.*
>
> *Now in any other method that you will see mathematicians talking about*
> *for counting primes you'll see a tell−tale list of primes being needed,*
> *and it's not because it's a luxury, but because it must be so, or their*
> *formulas won't work.*

Bullshit. For instance, in "Prime Numbers and Computer Methods
for Factorization", page 14, Hans Riesel explicitely wrote :

> Using formula (1.9) repeatedly, we can break down any Phi(x,a)
> to the computation of Phi(x,1) which is the number of odd
> integers <= x. However, because the recursion has to be used
> many times, the evaluation is cumbersome. It is far better
> to find a way to compute Phi(x,k) for some reasonably large
> value k, and then break down the desired value Phi(x,a) just
> to Phi(x,k) and no further.

That's not because the formulas don't work but because IT
IS FAR BETTER to do so.

mm