



## Exploring mathematics: a powerful tool

*Fermat and John Wallis*

### Anna Southgate

Did Fermat communicate his discovery to others?

### Jeanne Peiffer

Yes, he sent his results to Mersenne, a friar in Paris, who circulated his results among the mathematical community. In particular, Mersenne told Descartes about Fermat's methods. Fermat, Descartes was very very critical about, but finally accepted the methods of Fermat. Fermat also wrote to Wallis, in England, and he asked Wallis very very hard questions on number theory to test his knowledge in mathematics.

### Anna Southgate

John Wallis was a very accomplished mathematician, and an expert on many subjects including codes and ciphers. Open University maths historian Jeremy Gray.

### Jeremy Gray

Wallis was professor of mathematics at Oxford. He wrote a book on conics, and then, in 1655, he wrote a book called *Arithmetica Infinitorum*, the arithmetic of infinities. And in this book he did several key things. He had the formula for the area under  $y=x$  to the  $n$ , that Fermat had for various values of  $n$ , of course from 0 to 1. He invented the 'lazy 8' symbol for infinity that we use, and he invented and made systematic use of a notation for fractional powers of  $x$ .