

# Fermat's Christmas Theorem

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Fermat's Christmas Theorem (aka Fermat's theorem on sums of two squares) states that an odd prime number  $p$  can be expressed as

$$p = r^2 + s^2$$

where  $r, s \in \mathbb{N}$ , if and only if  $p$  is congruent to 1 modulo 4.