

$2x^2-1=y^{15}$  докажете, что если  $x>1$ , то  $x$  кратно 5

$$2x^2-1=y^{15}$$

$$\begin{aligned} y \bmod 5 &= 1 \\ y^{15} \bmod 5 &= 1 \\ 2x^2 &= (\bmod 5) 2 \\ x^2 \bmod 5 &= 1 \\ x \bmod 5 &= 1 \end{aligned}$$

$$\begin{aligned} x \bmod 5 &= 0 \\ y \bmod 5 &= 1 \end{aligned}$$

$$\begin{aligned} t &= 1, 2, 3, 4 \\ 2(5k+t)^2 &= y^{15} \\ 50k^2 + 20kt + 2t^2 &= y^{15} \end{aligned}$$

$50k^2 + 20t + 2 = y^{15} \Rightarrow y^{15} \bmod 5 = 2$   
1)  $y \bmod(5) = 2$       2)  $y \bmod(5) = 0, 1, 4$  не подходят  
2 4 3 1 2 4 3 1 2 4 3 1 2 4 **3**  
3)  $y \bmod(5) = 3$   
3 4 2 1 3 4 2 1 3 4 2 1 3 4 **2**

$$2x^2 = (1^{15} + 1) \bmod 5 = 2$$

у-неч

$$y \bmod 5 = 4 = y^{75} \bmod 5$$

$$\begin{aligned} x \bmod 5 &= 0 \\ y \bmod 5 &= 1 \end{aligned}$$

$$2(25k^2) = (5t+1)^{15}$$