28) For all integers n, if n is odd, then n^2 is odd

n = odd $\quad n = 2k+1$

$$\begin{aligned} n^2 &= (2k+1)(2k+1) \\ &= 4k^2+4k+1 \\ &= 4k(k+1)+1 \\ &= (2k)\cdot 2(k+1)+1 \\ &= 2k\cdot 2k+2+1 \end{aligned}$$

even $= 2k$

$$\begin{aligned} (2k)(2k) &= 4k^2 \\ &= 2(2k^2) \quad r = 2k^2 \end{aligned}$$

even $= 2r$

$n^2 =$ even $+ 3$

$2k$ = even $\quad 2k+1$ = odd

$(2k+1) - (2k) = 1$

odd − even = odd

odd = odd + even

$n^2 = (2k)(2k) + 3$ = odd