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$$n! + 5 = p \Rightarrow 5 \nmid n! \Rightarrow n = 1, 2, 3, \text{ or } 4$$

considering cases

$$2! + 5 = 7$$

$$3! + 5 = 11$$

$$4! + 5 = 29$$

$$1 \times 3! \times 5! \times \dots \times (2n-1)! = m!$$

$$1 \times 1! = 1! \quad (n=1, m=1)$$

$$1 \times 3! = 3! \quad (n=2, m=3)$$

$$1 \times 3! \times 5! = 6! \quad (n=3, m=6)$$

$$1 \times 3! \times 5! \times 7! = 10! \quad (n=4, m=10)$$

$n=5$ and $n=6$ fail (by calculation)

For other n , $m > 4n$, so there is a prime factor on RHS which is not in LHS, and so equality can't hold.