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Prove that the statement is false

There exists an integer $M \geq 3$ such that $M^2 - 1$ is prime

Negation: For all integers $M \geq 3$, $M^2 - 1$ is composite (not prime)

Suppose M is an arbitrary integer with $M \geq 3$

Proof of Negation

1. $M^2 - 1 = (M+1)(M-1)$ Basic Algebra
2. $M+1 > 1$ By substituting an $M \geq 3$
3. $M-1 > 1$ By substituting an $M \geq 3$
4. $M+1$ and $M-1 \neq 1$ Definition of Composite (not prime)
5. $M^2 - 1$ is composite (Not prime) Q.E.D.