Practice worksheet | Mathematical induction

Base case and induction hypothesis

Name: _____ Date: _____

6 questions | 13 marks

1. Check the base case for $1+3+\cdots+(2n-1)=n^2$, for $n \geq 1$. [2 marks]

2. State the induction hypothesis for $\sum_{r=1}^{n} r^2 = \frac{n(n+1)(2n+1)}{6}$. [2 marks]

3. Check the first case of $3^n - 1$ even for integers $n \geq 0$. [2 marks]

4. For positive integers n, write the induction hypothesis for $n^3 - n$ divisible by six. [2 marks]

5. A theorem is stated for n at least 4, but the proof starts at $n = 5$. Which case is omitted? [2 marks]

6. Why is an induction hypothesis not an assumption that the whole theorem is true? [3 marks]