Variant of **3.1.6 C**.
Sundstrom §3.1 p97. Math 300

Do not forget needed parentheses: $a \mid (b-17)$ is correct while $a \mid b-17$ is not right correct.
When symbolically write, we can use math symbol for divides, e.g., $a \mid (b-1)$.
Recall: $\mathbb{Z}^{\neq 0} = \mathbb{Z} \setminus \{0\}$. Similarly with $\mathbb{N}$ and $\mathbb{Q}$ and $\mathbb{R}$. This saves writing.

►. **Theorem 1**. For each integer n, if n is odd then 8 divides $(n^4 + 4n^2 + 11)$.

1. Symbolically write Theorem 1.

As explained in class, since a universe is not specified, we can pick any appropriate universe. Warning, we do not have (nor can we make one up) a symbol for the *odd integers*. We need to work the oddness into the open sentence.

2. Prove Theorem 1.

Hint. Pascal's Triangle ⟨and the Binomial Theorem⟩ are helpful in expanding $(x+y)^n$, where $n \in \mathbb{N}$ and $x, y \in \mathbb{R}$.

If you need a review, here is a link: Algebra 2.

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