3 Prove by induction that $7^n - 1$ is divisible by 3 for all positive integers n.

4 Prove by induction that $6 + 24 + 60 + \ldots + n(n+1)(n+2) = \frac{n(n+1)(n+2)(n+3)}{4}$ for all positive integers n.

7 Prove by induction that $7^n + 6^n$ is divisible by 13 for all odd positive integers n.

8 Prove by induction that $2 \times 1! + 5 \times 2! + 10 \times 3! + \ldots + (n^2 + 1)n! = n(n + 1)!$ for all positive integers n.