e3

6. True or False. If true, **prove** it. If false, then give a **counterexample**. If n is an integer with $1 \leq n$, then

$$1^2 + 2^2 + 3^2 + \cdots + n^2 = \frac{n(3n-1)}{2}.$$

False when $n=3$ the leftside is $1+4+9=14$ and the right side is $\frac{3 \cdot 8}{2} = 12$ and $12 \neq 14$.

7. True or False. If true, **prove** it. If false, then give a **counterexample**. If n is an integer with $n \mod 4 = 3$, then $\lceil n/4 \rceil = (n+3)/4$.

False Take $n=3$ $\lceil \frac{n}{4} \rceil = \lceil \frac{3}{4} \rceil = 1$

$\frac{n+3}{4} = \frac{6}{4} \neq 1$