

## 12.4 HW

Use the Principle of Mathematical Induction to show that the given statement is true for all natural numbers  $n$ .

1.  $2 + 4 + 6 + \dots + 2n = n(n+1)$

2.  $3 + 4 + 5 + \dots + (n+2) = \frac{1}{2}n(n+5)$

3.  $2 + 5 + 8 + \dots + (3n-1) = \frac{1}{2}n(3n+1)$

4.  $1 + 2 + 2^2 + \dots + 2^{n-1} = 2^n - 1$

5.  $4 + 3 + 2 + \dots + (5-n) = \frac{1}{2}n(9-n)$