Sum of Numbers

$1 + 2 + 3 + 4 = \frac{4}{2}(1+4) = 10$

$1+2+3+4+5+6 = \frac{6}{2}(1+6) = 3.7 = 21$

$1+2+3+\text{----------}+8+9+10 = \frac{10}{2}(1+10) = 5.11 = 55$

$1+2+3+4+\text{----------}(n-2)+(n-1)+n = \frac{n}{2}(1+n)$

$1+2+3+4+\text{ ---------} + (n-1)+n+(n+1)+(n+2)+ \text{ ----------} 2n-2+2n-1+2n = \frac{2n}{2}(1+2n)$

Given $S_n = n^2 - 2n$

Find $\Rightarrow a_n = ?$ $a_1 = ?$ $a_2 = ?$ $a_3 = ?$

$a_n = s_n - s_{n-1}$; $a_n = n^2 - 2n - \{(n-1)^2 - 2(n-1)\} =$

$= n^2 - 2n - [n^2 - 2n + 1 - 2n + 2] =$

$= -1 + 2n - 2 = 2n - 3$

$a_1 = 2.1 - 3 = -1$

$a_2 = 2.2 - 3 = 1$

$a_3 = 2.3 - 3 = 3$

we see that $(a_3 - a_2) = (a_2 - a_1)$