1.73
4

(א) 7, 10, 16, 28, 52, ...

(ב) 3, 6, 12, 24, ...

$a_n = a_1 + S^*_{n-1}$

$= 7 + \frac{3(2^{n-1}-1)}{2-1} = 7 + 3\cdot 2^{n-1} - 3 = 4 + 3\cdot 2^{n-1}$

(ג)

$a_2 - a_1 = 3$
$a_3 - a_2 = 6$
$a_4 - a_3 = 12$
$a_5 - a_4 = 24$
$\vdots$
$a_{n+1} - a_n = 3\cdot 2^{n-1}$

$a_{n+1} = a_n + 3\cdot 2^{n-1}$

$a_1 = 7$

(ד)

$S_n = a_1 + a_2 + \ldots + a_n$

$= (4+3\cdot 2^0) + (4+3\cdot 2^1) + (4\cdot 3\cdot 2^2) + \ldots + (4+3\cdot 2^{n-1}) =$

$= (4+4+\ldots+4) + 3(2^0 + 2^1 + \ldots + 2^{n-1}) =$

$= 4n + 3\cdot \frac{2^0(2^n-1)}{2-1} = 4n + 3\cdot 2^n - 3$