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Reading : pp. 290-291, 304-307
Set 5.6 : 2 , 4 & Set 5.7: 4, 6, 7

Find the first four terms (questions 2 & 4).

2. $b_k = b_{k-1} + 3k$, for all integers $k \geq 2$
$b_1 = 1$

$b_1 = 1$
$b_2 = b_1 + 3(2) = 7$
$b_3 = b_2 + 3(3) = 16$
$b_4 = b_3 + 3(4) = 28$

4. $d_k = k(d_{k-1})^2$, for all integers $k \geq 1$
$d_0 = 3$

$d_0 = 3$
$d_1 = 1(d_0)^2 = 9$
$d_2 = 2(d_1)^2 = 162$
$d_3 = 3(d_2)^2 = 78{,}732$

A sequence is defined recursively. Use iteration to guess an explicit formula for the sequence.
Use the formulas from Section 5.2 to simplify your answers wherever possible.

4. $b_k = \dfrac{b_{k-1}}{1 + b_{k-1}}$, for all integers $k \geq 1$
$b_0 = 1$

$b_0 = 1$
$b_1 = b_0/(1 + b_0) = 1/(1 + 1)$ $=2^{-1}$
$b_2 = b_1/(1 + b_1) = 1/(1 + (1/(1 + 1)))$ $=2(2^{-1})$
$b_3 = b_2/(1 + b_2) = 1/(1 +(1/(1 + (1/(1 + 1)))))$ $=2(2(2^{-1}))$
$b_4 = b_3/(1 + b_3) = 1/(1 + (1/(1 +(1/(1 + (1/(1 + 1)))))))$ $=2(2(2(2^{-1})))$

Guess: n^{-1}

H 6. $d_k = 2d_{k-1} + 3$, for all integers $k \geq 2$
$d_t = 2$

$d_1 = 2$

$d_2 = 2(d_1) + 3 = 2*2 + 3$ $= 2^2 + 2 + 1$

$d_3 = 2(d_2) + 3 = 2*(2*2 + 3) + 3$ $= 2^3 + 3(2+1)$

$d_4 = 2(d_3) + 3 = 2*(2*(2*2 + 3) + 3) + 3$ $= 2^4 + 3(2^2 + 2 + 1)$

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

$2^n + 3((2^{n-1} - 1)/(2-1))$
$= 2^n + 3(2^{n-1} - 1)$

Guess: $2^n + 3(2^{n-1} - 1)$

7. $e_k = 4e_{k-1} + 5$, for all integers $k \geq 1$
$e_0 = 2$

$e_0 = 2$

$e_1 = 4(e_0) + 5$

$e_2 = 4(e_1) + 5 = 4^2 * (e_0) + 4(5) + 5$

$e_3 = 4(e_2) + 5 = 4^3 * (e_0) + 4^2(5) + 4^1(5) = 4^3 * (e_0) + 5(1 + 4^1 + 4^2 + 4^3)$

Guess: $e_k = 4^k(e_0) + (5(4^k - 1))/3$