Homework 02

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Section 8.3

Ex.36: Using the conclusion from Ex.31:

we get: $f(n) = \frac{2^2 \times 1}{2^2 - 8} \cdot n^2 + (1 + \frac{2^2 \times 1}{8 - 2^2}) \cdot n^{\log_2 8}$

$= -n^2 + 2n^3$

Ex.37: ~~$O(n)$~~ $= O(n^3)$

Section 8.4

Ex.12:

(a) $1/(1+3x)$: coefficient of x^{12} is: $3^{12} = 531441$

(b) $1/(1-2x)^2$: coeffient of x^{12} is: $2^{12} \cdot C(2+12-1, 2-1)$

$= 2^{12} \cdot C(13, 1)$

$= 53248$

(c) $1/(1+x)^8$: coefficient of x^{12} is: [illegible]

$(-1)^{12} \cdot C(8+12-1, 8-1)$

$= C(19, 7)$

$= 50388$

Ex.24.

(a)

$(x^3+x^4+x^5+\cdots)(x+x^2+x^3+x^4+x^5)(1+x+x^2+x^3+x^4+x^5)$

$(x+x^2+x^3+\cdots)$

(b)

Ex.34.