

第1題.

1. (a)	$n=1 \Rightarrow 2$
$+10$	$n=2 \Rightarrow 3$
	$n=3 \Rightarrow 5$
	$n=4 \Rightarrow 8$
	$a_n = a_{n-1} + a_{n-2}, a_1 = 2, a_2 = 3$
(b)	$n \geq 2, a_1 = 2, a_2 = 3$
(c)	$n=5 \Rightarrow 13, n=6 \Rightarrow 21, n=7 \Rightarrow 34$

第2題.

2.	(a) $L_n = \frac{1}{2}(L_{n-1} + L_{n-2})$
	$= \frac{1}{2}L_{n-1} + \frac{1}{2}L_{n-2}$
$+20$	(b) $r^2 - \frac{1}{2}r - \frac{1}{2} = 0, r = 1, -\frac{1}{2}$
	$L_n = \alpha_1 \cdot 1^n + \alpha_2 \left(-\frac{1}{2}\right)^n$
	$\begin{cases} L_1 = 1000 = \alpha_1 - \frac{1}{2}\alpha_2 \\ L_2 = 2000 = \alpha_1 + \frac{1}{4}\alpha_2 \end{cases}$
	$\alpha_2 = \frac{4000}{3}, \alpha_1 = \frac{5000}{3}$
	$L_n = \frac{5000}{3} + \left(-\frac{1}{2}\right)^n \cdot \frac{4000}{3}$

第3題.

3.	$a_n = 2a_{n-1} + 5a_{n-2} - 6a_{n-3}$
$+15$	$r^3 - 2r^2 - 5r + 6 = 0, r = 1, -2, 3$
	$a_n = \alpha_1 \cdot 1^n + \alpha_2 (-2)^n + \alpha_3 \cdot 3^n$
	$\begin{cases} a_0 = 14 = \alpha_1 + \alpha_2 + \alpha_3 \\ a_1 = -8 = \alpha_1 - 2\alpha_2 + 3\alpha_3 \\ a_2 = 16 = \alpha_1 + 4\alpha_2 + 9\alpha_3 \end{cases}$
	$\begin{cases} \alpha_1 = 10 \\ \alpha_2 = -6 \\ \alpha_3 = -2 \end{cases}$
	$a_n = 10 + 6(-2)^n - 2 \cdot 3^n$

第4題.

4. (a) $a_n = 2a_{n-1} + 3^n$

$a_n^{(H)} = 0 \cdot 2^n$

$a_n^{(P)} = C \cdot 3^n$

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

$3C = 2C + 3$

$C = 3$

$a_n = a_n^{(H)} + a_n^{(P)} = 0 \cdot 2^n + 3 \cdot 3^n$

b) $a_1 = 5 = 2a + 3^2$

$2a = -4$

$a = -2$

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

第5題.

$(x^1 + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10})^5$

x 的係數 $= 15$

$x_1 + x_2 + x_3 + x_4 + x_5 = 12$

$x_1 + x_2 + x_3 + x_4 + x_5 \leq 6$

$\Rightarrow C_5^{(5+6-1)} = \frac{10!}{5!5!}$

第6題.

(a). ans: 10

$$(1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10})(1+x^2+x^4+x^6+x^8+x^{10})(1+x^5+x^{10})$$

求出 x^{10} 的係數 : 10

(b). ans: 11

$$(1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10})(1+x^2+x^4+x^6+x^8+x^{10})(1+x^5+x^{10})(1+x^{10})$$

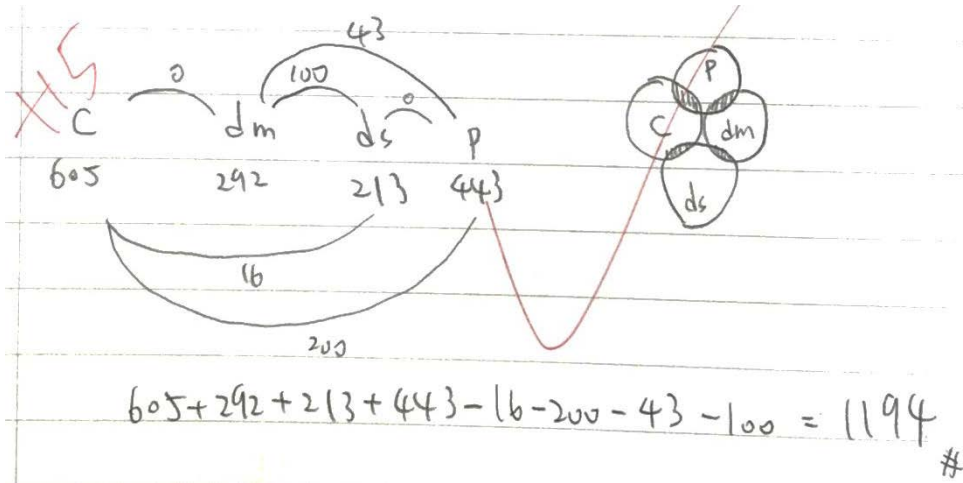
求出 x^{10} 的係數 : 11

(c). ans: 2

$$(x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10})(x^2+x^4+x^6+x^8+x^{10})(x^5+x^{10})$$

求出 x^{10} 的係數 : 2

第7題.



第8題.

$$\lfloor \sqrt{8000} \rfloor + \lfloor \sqrt[3]{8000} \rfloor - \lfloor \sqrt[6]{8000} \rfloor = 89 + 20 - 4 = 105$$

第9題.

9.

(a) $a_1 = 1$
 $a_2 = 2$
 $a_3 = 3$
 $a_4 = 5$
 $a_5 = 8$

$\Rightarrow a_n = a_{n-1} + a_{n-2}, a_1 = 1, a_2 = 2, n > 2.$

(b) $a_1 = 1, a_2 = 2, n > 2.$

(c) $a_6 = 13, a_7 = 21, a_8 = 34, a_9 = 55, a_{10} = 89 \#$