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22C:019 Homework 6

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4a. $a_n = (12/5)((3)^n)+(3/5)((-2)^n)$

4e. $a_n = 2(1^n)+3(-1)^n$

8a. L_n is the lobsters caught. n is the year

$L_n = ((L_{(n-1)}+L_{(n-2)})/2)$

8b. $L_n = (700000/3)(1^n)+(800000/3)(-1/2)^n$

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4a. not reflexive; not symmetric; anti-symmetric; transitive

4d. reflexive; symmetric; not anti-symmetric; not transitive

6d. not reflexive; not symmetric; anti-symmetric; not transitive

6f. not reflexive; symmetric; not anti-symmetric; not transitive

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12. (9191,2,80,4)

16.

Airline	**Flight number**	**Destination**
Nadir	122	Detroit
Acme	221	Denver
Acme	122	Anchorage
Acme	323	Honolulu
Nadir	199	Detroit
Acme	222	Denver
Nadir	322	Detroit

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2c. $$M_R = \begin{bmatrix} 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

2d. $$M_R = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 1 & 1 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

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(use pigeonhole principle)
18.
G = (V,E) and |V| >= 2
L = max(deg v)
if v_1 does not equal V_0, then V_1 exists in V such that deg v_1 = k
if not, then there are k different vertices
f(i,j) = {1,2,3,…,k} such that v_i = deg v_j. there always exist two vertices of the same degree

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40.