離散數學 107-2

Homework 06

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Handout: 2019.05.13 (week-13)

題目

題目與注意事項

作答區

解題

完成作業小時數

Homework 06 題目

(Prob. 1) page 418, chapter 6.1 Exercise 36
(Prob. 2) page 427, chapter 6.2 Exercise 38
(Prob. 3) page 435, chapter 6.3 Exercise 20
(Prob. 4) page 444, chapter 6.4 Exercise 16
(Prob. 5) page 455, chapter 6.5 Exercise 12
(Prob. 6) page 461, chapter 6.6 Exercise 6

注意事項

(a) 要熟悉 LaTeX 請翻閱 lshort。

(b) 記得在最後一頁，回報完成作業小時數 (估算，取整數)。

(c) 將檔案夾命名為 `hw06_107820xxx`，將檔案夾壓縮成 `hw06_107820xxx.zip`，上傳到網路學園。

(d) LaTeX 數學符號請查此表: List of LaTeX mathematical symbols。

(e) 作業抄襲，以零分計。作業提供給他人抄襲，以零分計。

(f) 作業遲交一週內成績打五折，作業遲交超過一週以零分計。

Problem 01 (6.1 Exercise 36)

There are 2 possible image,since the image has to be 0 or 1.

And the domain contains n elements.

Terefore,there are 2^n different functions.

Problem 02 (6.2 Exercise 38)

There are six computers, and each computer connected to at least one of the other five computers, this means the possible connection for each computer is: 1, 2, 3, 4, 5, by using the Pigeon and Pigeonhole Principle, let these 5 possible connections be the Pigeonholes, and let the six computers be the Pigeons, therefore there are must at least two computers have same number of connections.

Problem 03 (6.3 Exercise 20)

(a) $C(10,3) = 120$

(b) $C(10,4) + C(10,3) + C(10,2) + C(10,1) + C(10,0) = 210 + 120 + 45 + 10 + 1 = 386$

(c) $C(10,7)+C(10+8)+C(10,9)+C(10,10) = 120+45+10+1 = 176$

(d) $C(10,3) + C(10,4) + C(10,5) + C(10,6) + C(10,7) + C(10+8) + C(10,9)+C(10,10) = 120+210+252+210+120+45+10+1 = 968$

Problem 04 (6.4 Exercise 16)

Pascal identity: $\binom{n+1}{k}=\binom{n}{k-1}+\binom{n}{k}$

$\binom{11}{1}$ = 1+10=11

$\binom{11}{2}$ = 10+45=55

$\binom{11}{3}$ = 45+120=165

$\binom{11}{4}$ = 120+210+330

$\binom{11}{5}$ = 210+252=462

$\binom{11}{6}$ = 252+210=462

$\binom{11}{7}$ = 210+120=330

$\binom{11}{8}$ = 120+45=165

$\binom{11}{9}$ = 45+10=55

$\binom{11}{10}$ = 10+1=11

The row of $\binom{11}{k}$ is 1 11 55 165 330 462 462 330 165 55 11 1

Problem 05 (6.5 Exercise 12)

pennies+nickels+dimes+quarters+ half dollars=20
Therefore by Theorem 2 the answer is C(4+20, 20) = C(24, 20) = 10626.

Problem 06 (6.6 Exercise 6)

(a) 1423
(b) 51234
(c) 13254
(d) 612354
(e) 1623574
(f) 23587461

完成作業小時數

完成作業小時數:共 5 小時(估算，取整數)