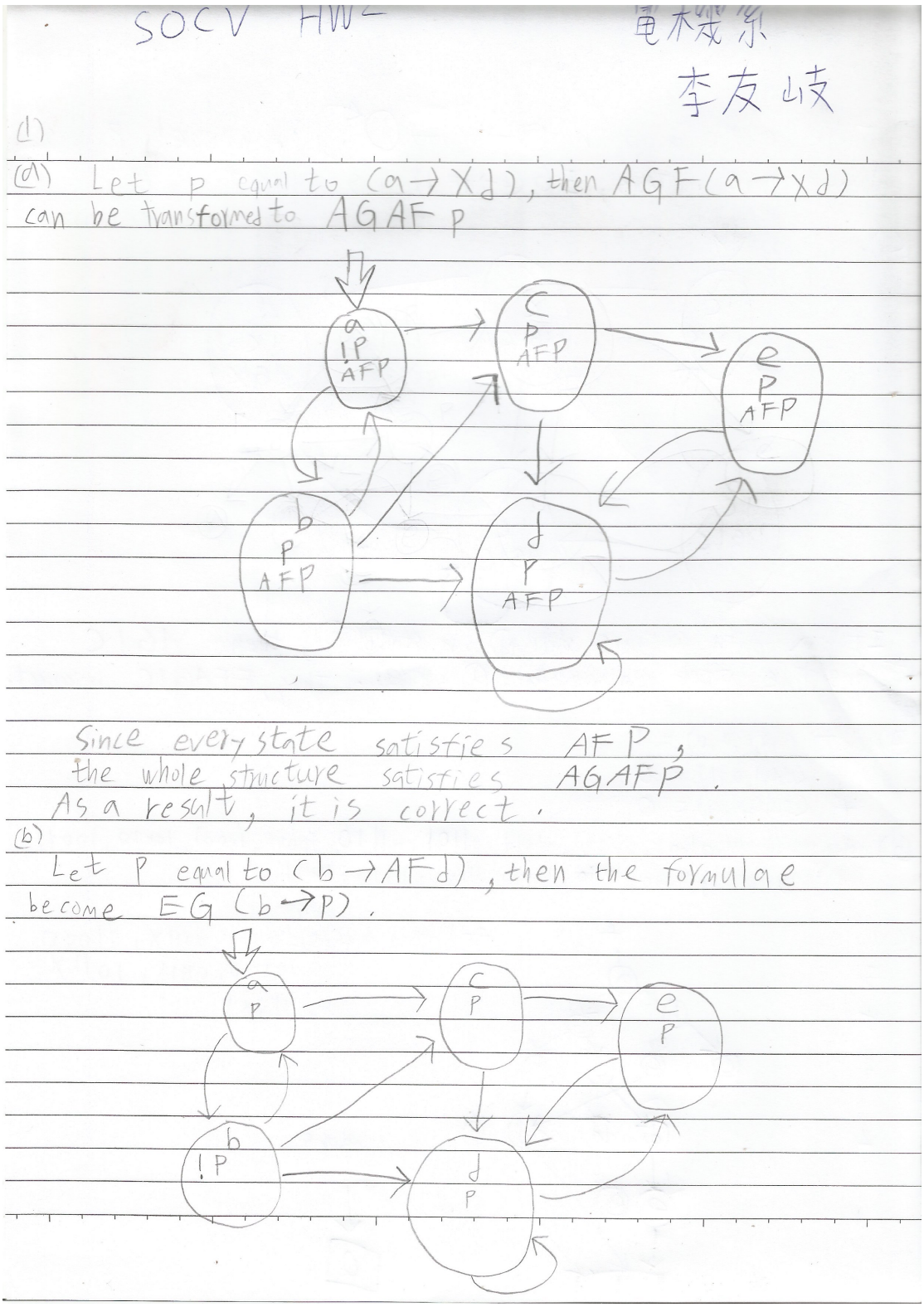
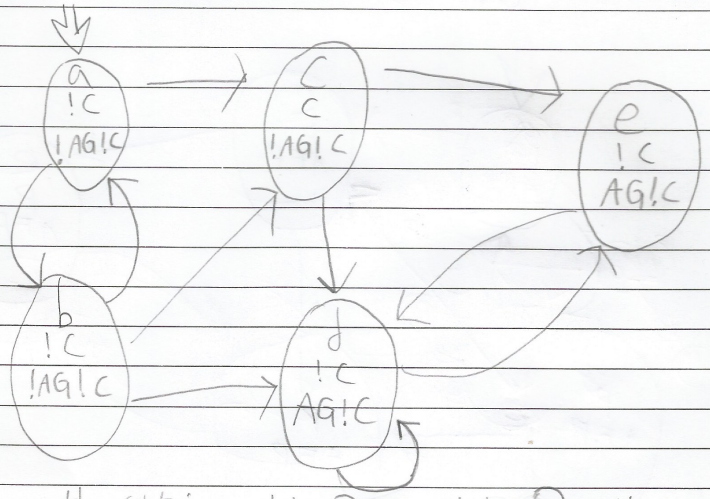
Problem 1~5

電機系　　李友岐



There exists a path ⓐ→ⓒ→ⓓ↺, where P is always true. Thus, EG(b→AFd) is correct.

(c)



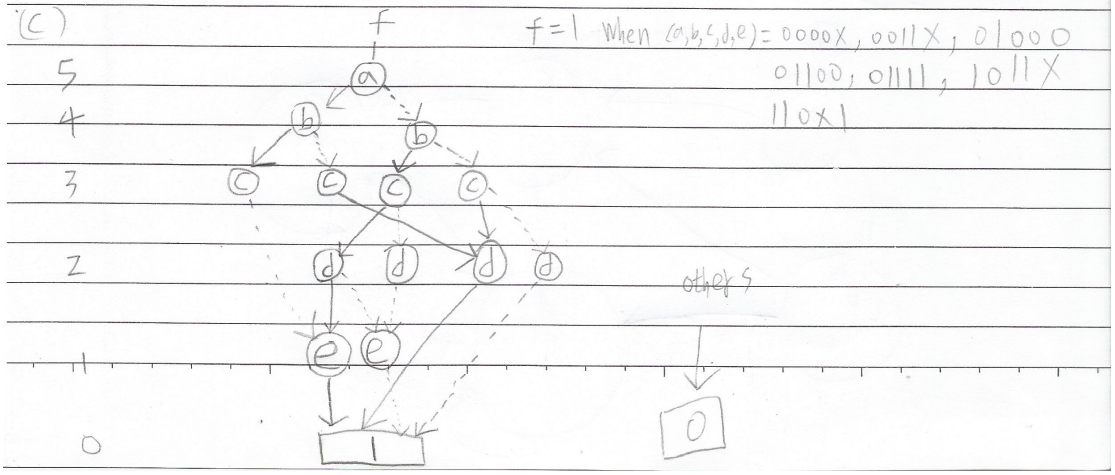
If a path contains state ⓓ or state ⓔ, then AG!c becomes true after reaching state ⓓ or ⓔ. Thus, EFAG!c is correct.

(2)

(a) f(0,0,0,0,0) = 1
f(1,0,1,0,1) = 0
f(0,1,0,1,0) = 0

(b) 00010, 00011, 00100, 00101, 01001, 01010, 01011, 01101, 01110, 10000, 10001, 10010, 10011, 10100, 10101, 11000, 11010, 11100, 11101, 11110, 11111.

(c)



f=1 When (a,b,c,d,e) = 0000X, 0011X, 01000
01100, 01111, 1011X
1101X

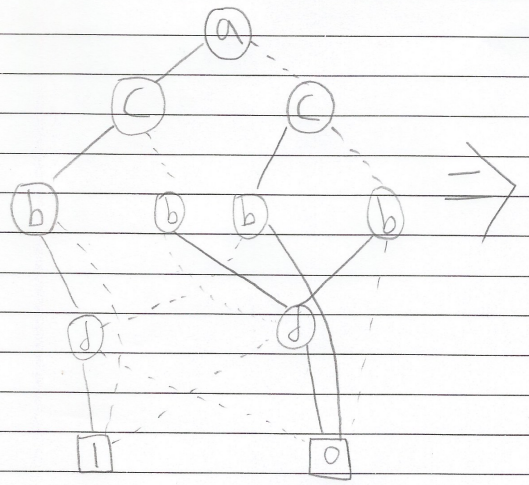
(3) $R = ite(F, 0, G)$

$= ite(G, 0, F)$ by rule 2

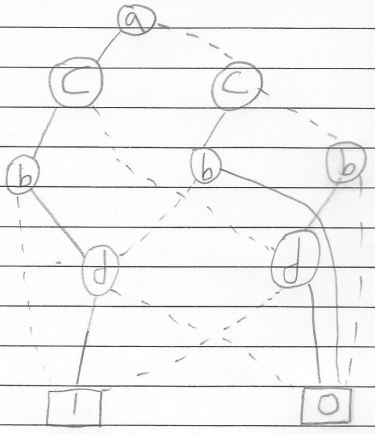
$= \overline{ite(\bar{G}, 1, F)}$ by rule 3

※

(4)

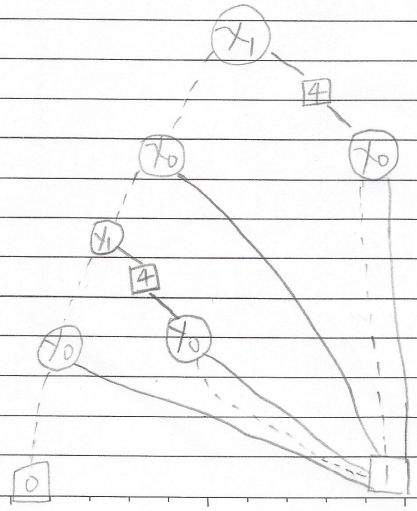


Final BDD



∴ The difference in the number of nodes is one.

(5)



$X^2 + Y^2 = 4X_1^2 + 4X_1X_0 + X_0^2 + 4Y_1^2 + 4Y_1Y_0 + Y_0^2$

$= 4X_1 + 4X_1X_0 + X_0 + 4Y_1 + 4Y_1Y_0 + Y_0$

$= 4X_1(1+X_0) + X_0 + 4Y_1(1+Y_0) + Y_0$