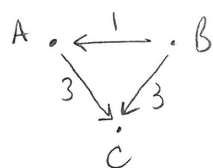


Chapter 4 homework solutions

1)

3	2	2	1	1
A	B	C	A	B
B	A	B	C	C
C	C	A	B	A



Dominating sets:

- $\{A, B, C\}$
- $\{A, B\}$
- $\{B\}$

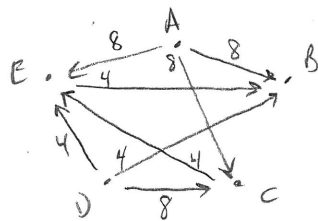
Smith set $\{B\}$

Pairwise winner $A=1, B=2, C=0$

$w = \{B\}$

2)

2	2	4	A:B	8:0	B:D	2:6
A	A	D	A:C	8:0	B:E	2:6
B	E	A	A:D	4:4	C:D	0:8
D	D	C	A:E	8:0	C:E	6:2
C	B	E	B:C	4:4	D:E	6:2
E	C	B				



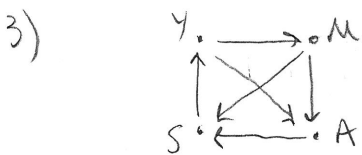
Dominating sets: $\{A, B, C, D, E\}$
 $\{A, D\}$

Smith set is $\{A, D\}$

Pairwise Comparison

$A = 3\frac{1}{2}, B = \frac{1}{2}, C = 1\frac{1}{2}, D = 3\frac{1}{2}, E = 1$
note total = 10 = 4+3+2+1 ✓

$w = \{A, D\}$



a) Sequential

M Y S A
↑ ↑ ↑

$w = \{A\}$

b) Smith set

$\{A, Y, M, S\}$

4) Suppose x is a Condorcet candidate. Then x beats all other candidates in one-to-one comparison. That means $\{x\}$ is a dominating set, and it must be the smallest dominating set, so $S = \{x\}$.

5) Can use election from problem 3 above. $\{A, Y, M, S\}$ is the Smith set.

But for Pairwise Comparison, $Y=2, M=2, A=1, S=1$ $w = \{Y, M\}$.