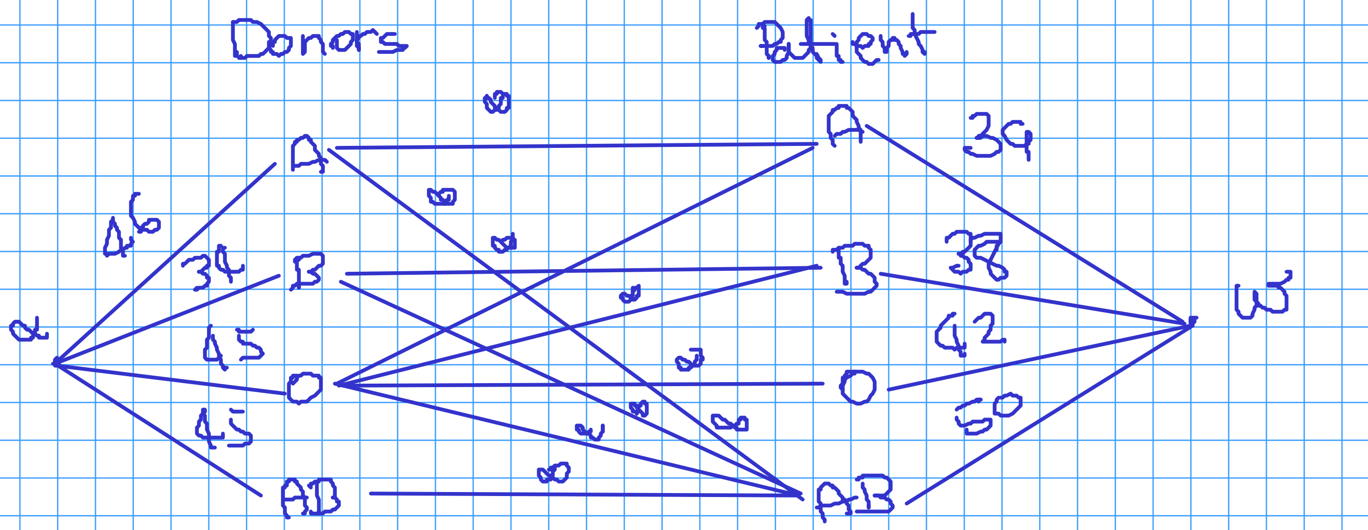
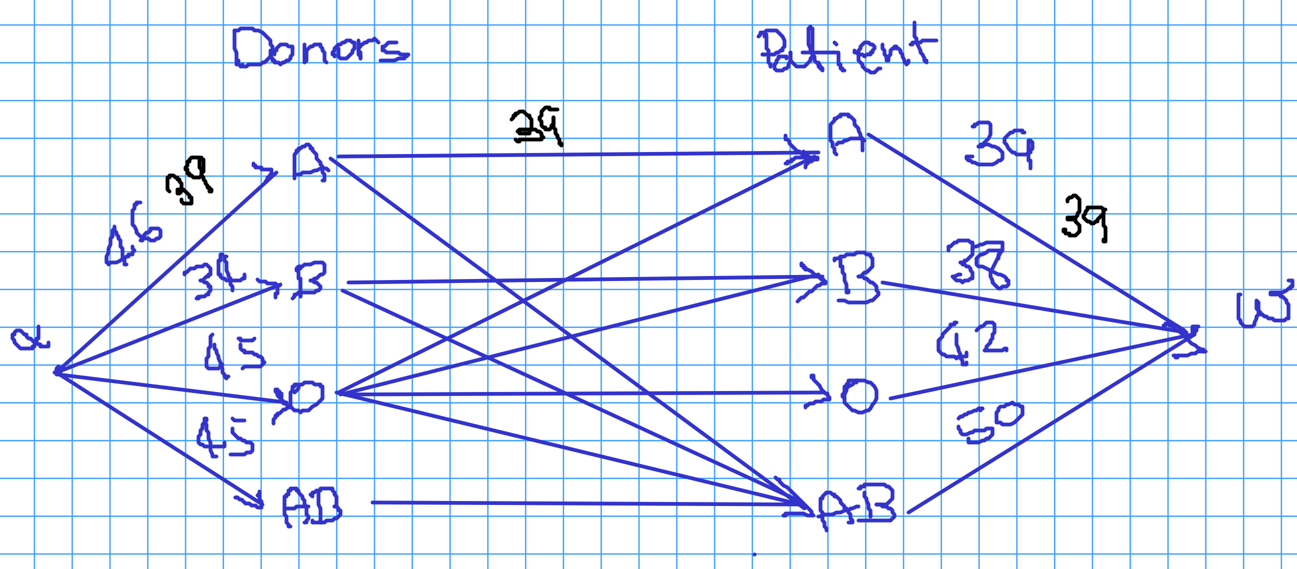
Blood type	A	B	O	AB
Supply	46	34	45	45
Demand	39	38	42	50

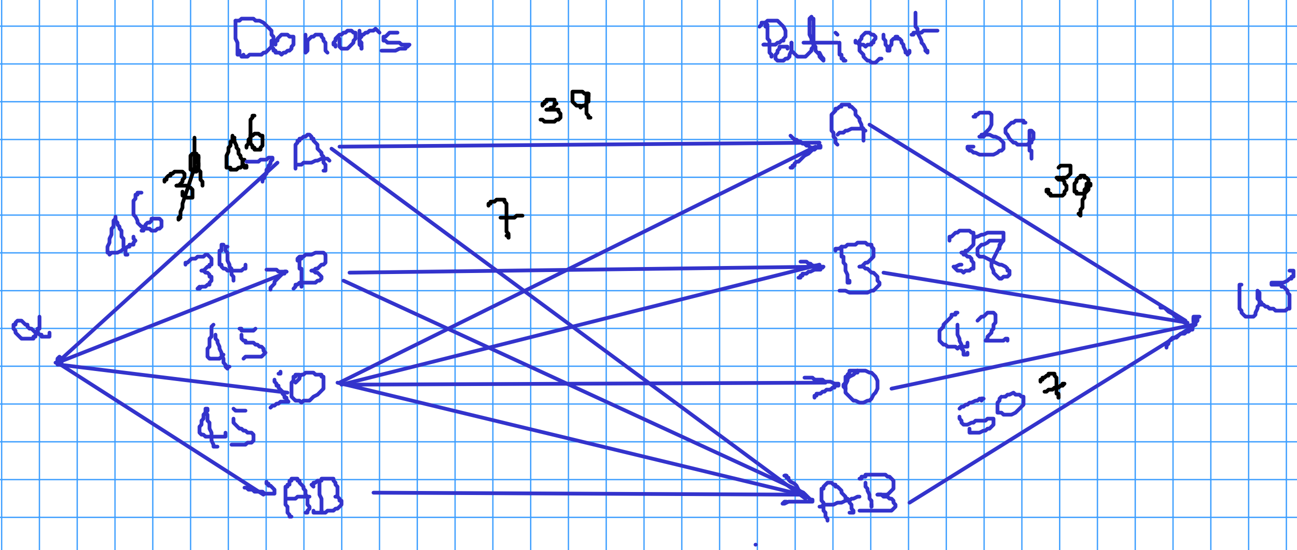


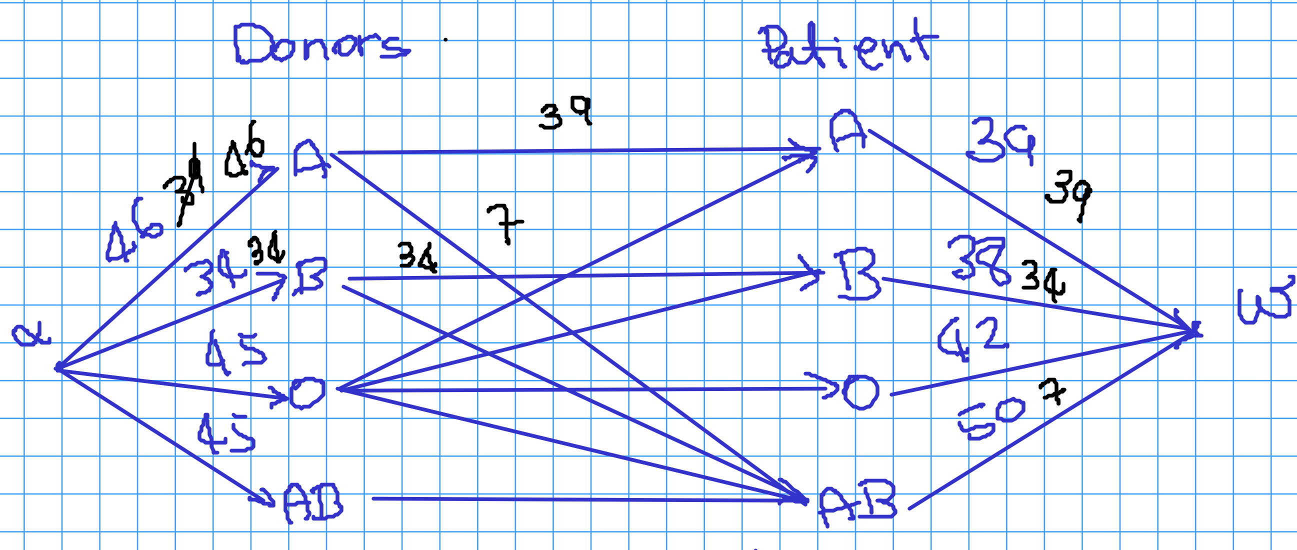
We want a flow f with $val(f) = 169$

This will be maximum since

$$c(\{\omega\}^c, \{\omega\}) = 169$$




Donors
Patient
α
A
B
O
AB
A
B
O
AB
ω
39
7
46
34
45
45
39
39
38
42
50
7


Donors
Patient
α
A
B
O
AB
A
B
O
AB
ω
39
7
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39
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38
34
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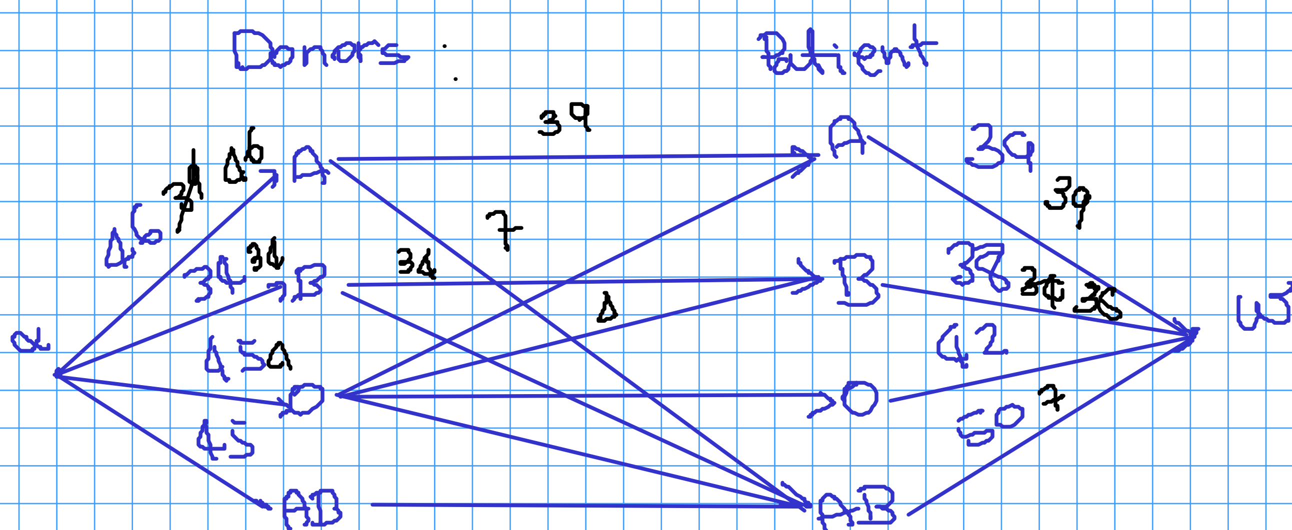
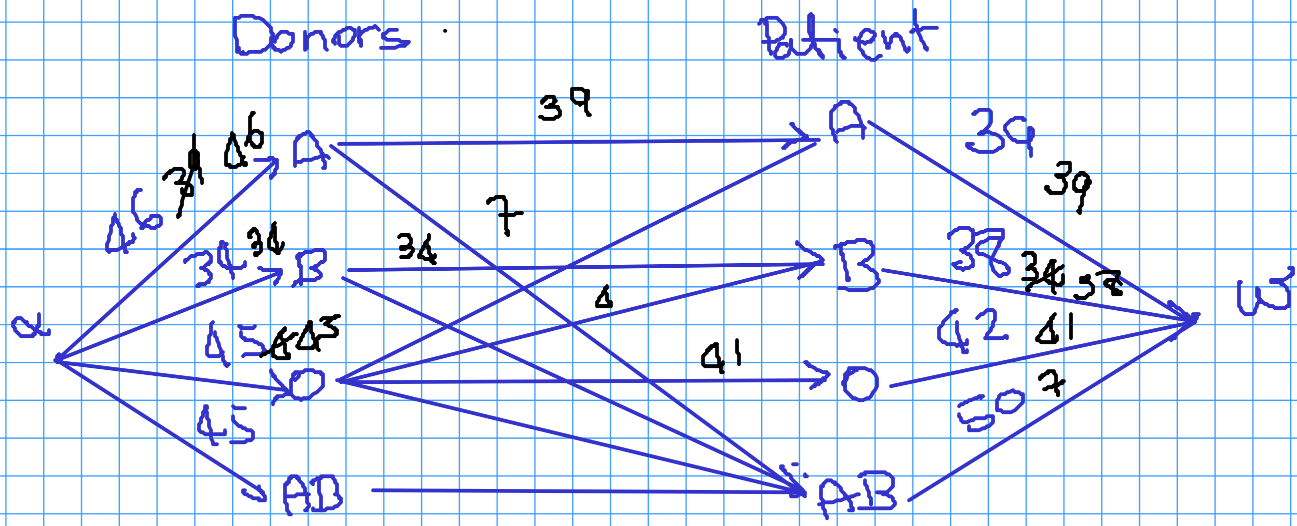
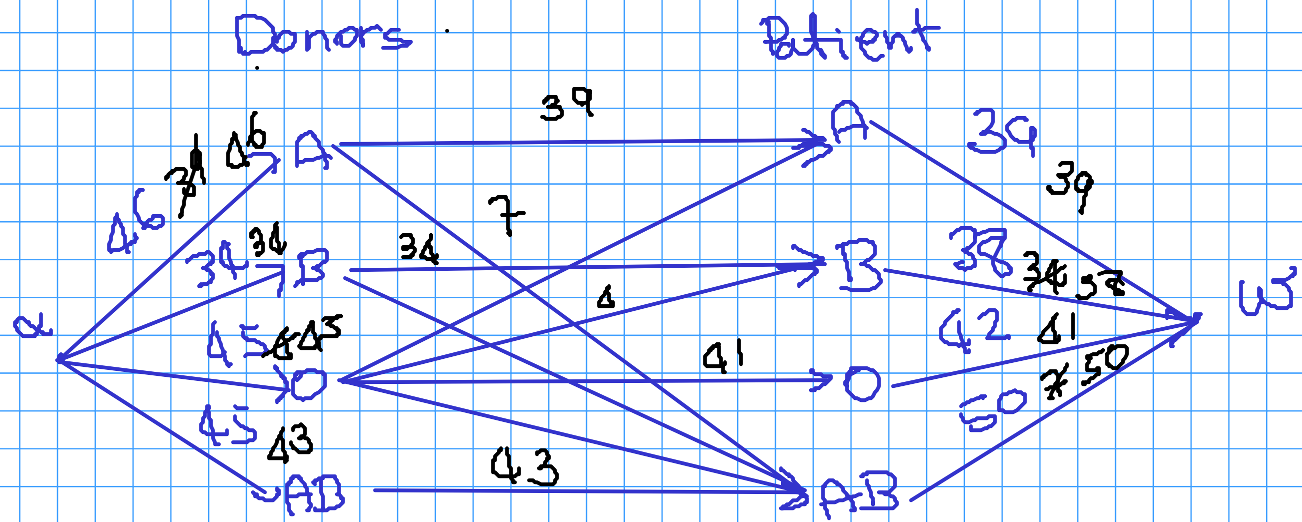
50
7


Donors
Patient
α
A
B
O
AB
A
B
O
AB
ω
39
7
34
46
34
45
39
39
38
42
50
7



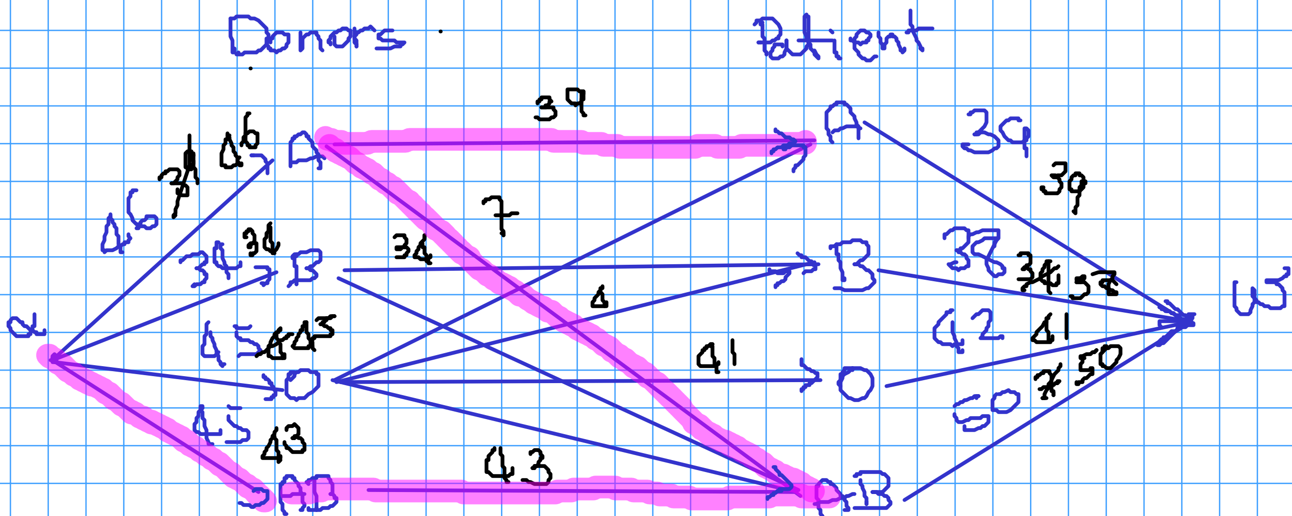


There is no an f-augmenting path so this is a max flow.

Val $f = 168 < 169$

We double check this by finding a cut with the same capacity. Starting from α we use the longest possible admissible path

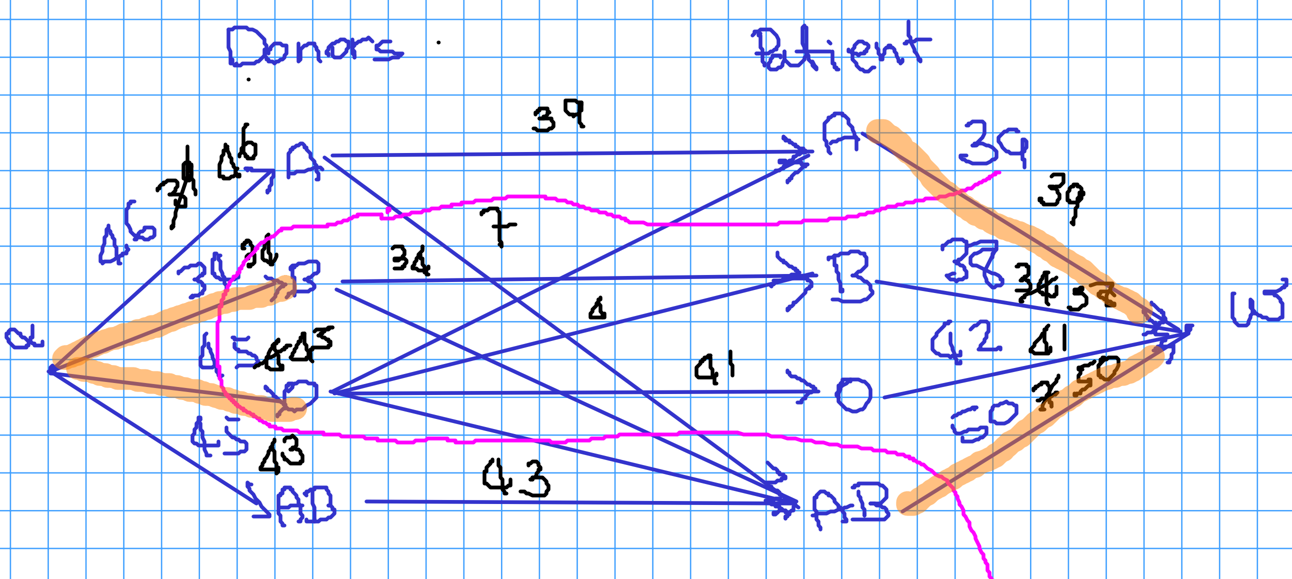
→



$P = \{\alpha, AB_D, AB_P, A_D, A_P\}$

$P^c = \{O_P, O_D, B_P, B_D, \omega\}$

to compute the capacity of the cut we consider the capacity of edges from P to Pc



$C(P, P^c) = 50 + 39 + 34 + 45 =$

$= 168 = Val(f)$

We deduce that not every patient can get blood.