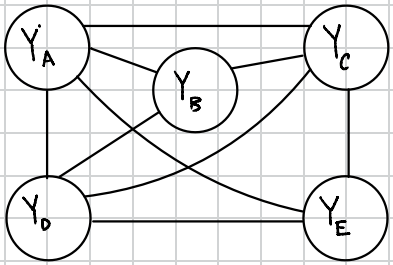
Q 1




$D(Y_A) = \{10,20,30,40,50\}$
$D(Y_B) = \{10,20,30,50\}$
$D(Y_C) = \{10,20,40,50\}$
$D(Y_D) = \{10,30,40,50\}$
$D(Y_E) = \{10,30,40,50\}$

(a) The neighbors of $Y_D$ are $Y_A, Y_B, Y_C, Y_E$

(b) if $Y_A = 10$ and $Y_B = 20$

$Y_D$ could equal ~~10~~, 30, 40, 50

(c) $Y_A = 10$
$Y_B = 20$
$Y_C : \{40,50\}$
$Y_D : \{30,40,50\}$
$Y_E : \{30,40,50\}$

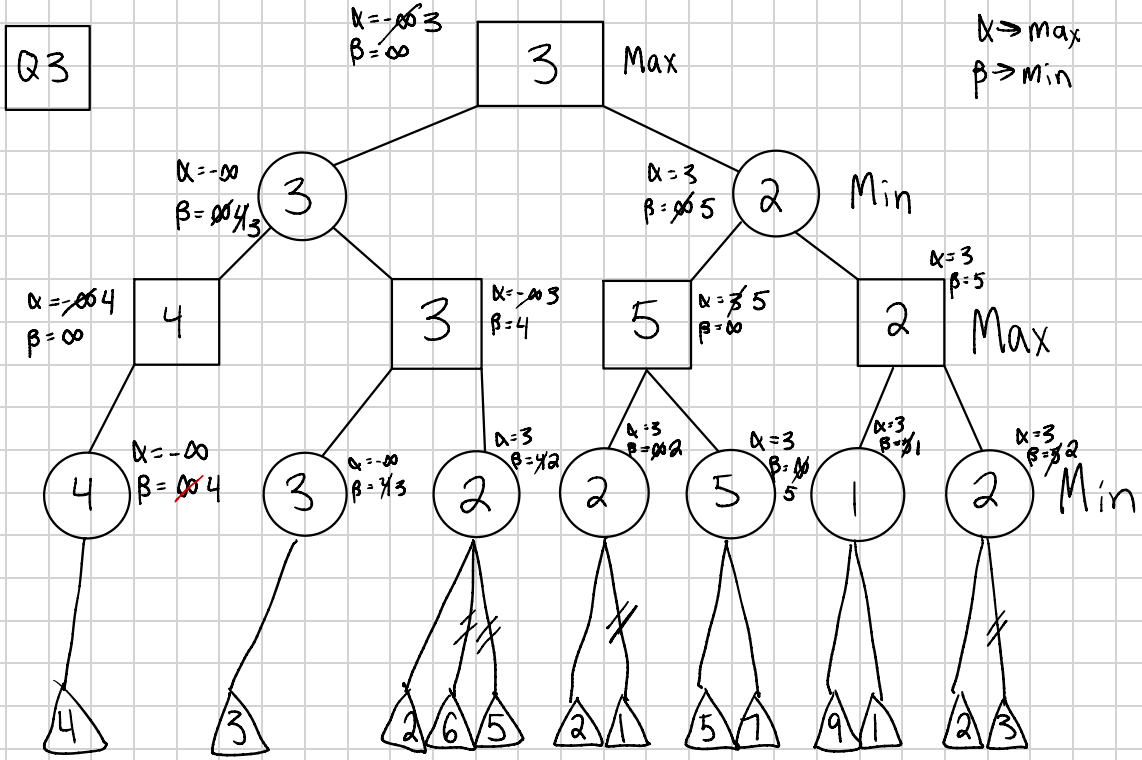
(d) If $D(Y_C) = \{20\}$ and $D(Y_E) = \{10\}$

Then
$Y_A : \{30,40,50\}$
$Y_B : \{10,30,50\}$
$Y_C = 20$
$Y_D : \{30,40,50\}$
$Y_E = 10$

(e) If
$Y_A = 10$
$Y_B = 20$
$Y_D = 40$
$Y_E = 50$
Then options are
$Y_C : \{\emptyset\}$

We should backtrack because there are no options for $Y_C$ available that fit the constraints.

Q3


α = max
β = min
α = -∞ / 3
β = ∞
3
Max
α = -∞
β = ∞ / 4 / 3
3
α = 3
β = ∞ / 5
2
Min
α = -∞ / 4
β = ∞
4
3
α = -∞ / 3
β = 4
5
α = 3 / 5
β = ∞
2
α = 3
β = 5
Max
4
α = -∞
β = ∞ / 4
3
α = -∞
β = 4 / 3
2
α = 3
β = 4 / 2
2
α = 3
β = ∞ / 2
5
α = 3
β = ∞ / 5
1
α = 3
β = ∞ / 1
2
α = 3
β = ∞ / 2
Min
4
3
2
6
5
2
1
5
7
9
1
2
3