

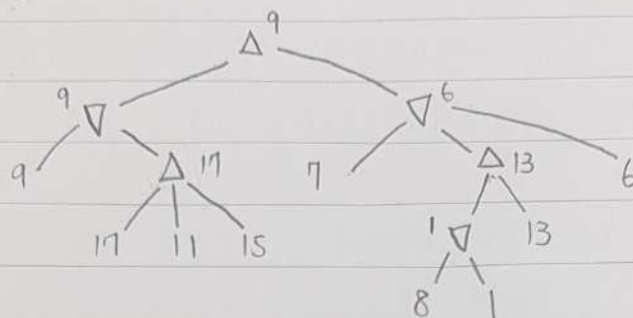
Problem 1:

(a) MAX

MIN

MAX

MIN



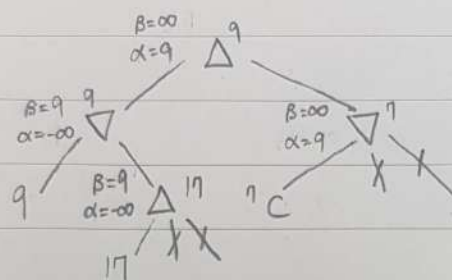
(b)

MAX

MIN

MAX

MIN



Not examined: J, K, G, H, L, M, N, O

According to class slides, it will  
prune before updating  $\alpha, \beta$ .

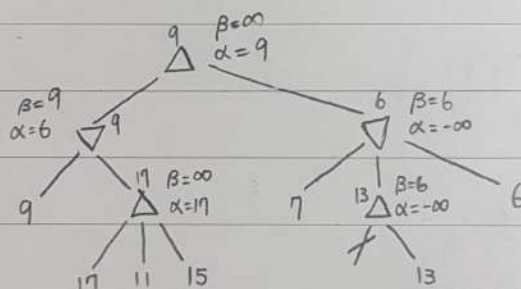
(c)

MAX

MIN

MAX

MIN



Not examined: L, N, O

Problem 2:

(a)  $\text{Occupation}(\text{Emily}, \text{surgeon}) \vee \text{Occupation}(\text{Emily}, \text{lawyer})$ (b)  $\text{Occupation}(\text{Joe}, \text{actor}) \wedge (\exists x (x \neq \text{actor}) \wedge \text{Occupation}(\text{Joe}, x))$ (c)  $\forall x \text{Occupation}(x, \text{surgeon}) \rightarrow \text{Occupation}(x, \text{doctor})$ (d)  $\forall x \text{Occupation}(x, \text{lawyer}) \rightarrow \neg \text{Customer}(\text{Joe}, x)$ (e)  $\exists x \text{Occupation}(x, \text{lawyer}) \wedge \text{Boss}(x, \text{Emily})$ (f)  $\exists x \forall y (\text{Occupation}(x, \text{lawyer}) \wedge \text{Customer}(y, x)) \rightarrow \text{Occupation}(y, \text{doctor})$ (g)  $\forall x \text{Occupation}(x, \text{surgeon}) \rightarrow (\exists y \text{Customer}(x, y) \wedge \text{Occupation}(y, \text{lawyer}))$

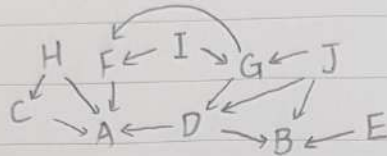
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Problem 3: (a)  $P(A, B, C, D, E, F, G, H, I, J)$

$$= P(A|C, D, F, H, I) \times P(B|D, E, G, J) \times P(C) \times P(D|I) \times P(E|J) \\ \times P(F) \times P(G|I) \times P(H|I) \times P(I) \times P(J)$$

(b)



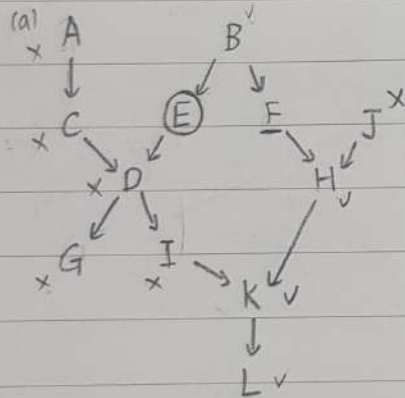
(c)  $P(C=f \wedge R=f \wedge S=t \wedge W=t)$

$$= P(C) \cdot P(R|C) \cdot P(S|C) \cdot P(W|R, S)$$

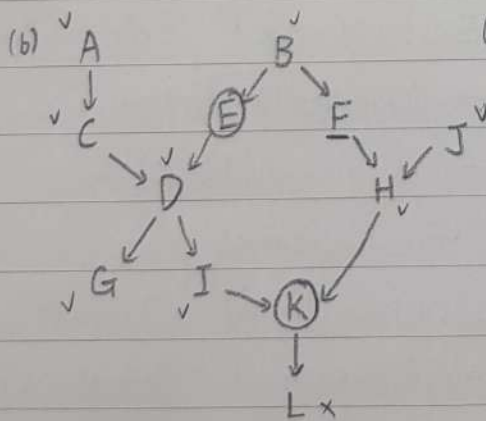
$$= 0.5 \times 0.8 \times 0.5 \times 0.9$$

$$= 0.18$$

Problem 4:



(a) A, C, D, G, I, J



(b) L