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Q1:

ai)

Assuming a_1 and a_2 were not terminal, number of conditional plans = $|A|^{|E|^d - 1}$

$= 3^{2^2 - 1} = 27$

Number of conditional plans starting with a_3 = 27/3 = 9

ii)

[a_3, if Percept = left then a_1 else a_2]

bi)

$\alpha_{[a1]}$ = p(100) + (1-p)(-100) = 200p -100

$\alpha_{[a2]}$ = (1-p)(100) + p(-100) = 100 – 200p

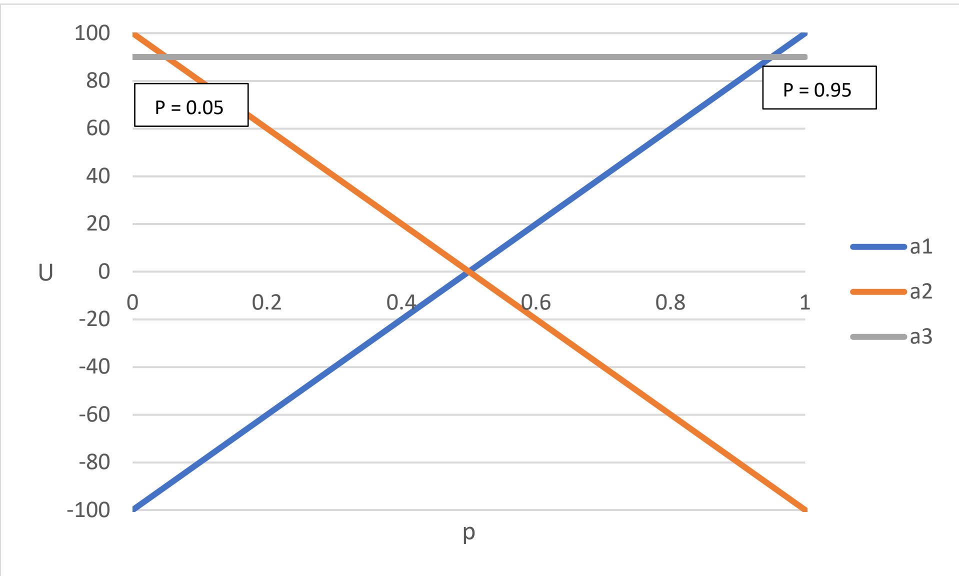
$\alpha_{[a3,\ \text{if Percept=left then a1 else a2}]}$ = -10 + γ(100) = 90

bii)

From p = 0 to p = 0.05, the optimal conditional plan is [a_2]

From p = 0.05 to p = 0.95, the optimal conditional plan is [a_3, if Percept = left then a_1 else a_2]

From p = 0.95 to p = 1, the optimal conditional plan is [a_1]



Q2:

Assume that P(s' | s, left) = 1, where s' is left of s.

b'(s') = αP(e | s') $\sum_s$ P(s' | s,a) b(s)

b' =

α(0.1)(1/9)	α(0.1)(1/9)	0	0
0		0	0
α(0.1)(1/9)	α(0.1)(1/9)	α(0.9)(1/9)	0

α(1/90)(4) + α(0.1) = 1

α = 90/13

b' =

0.07692	0.07692	0	0
0		0	0
0.07692	0.07692	0.69231	0