In class 09

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1. x1 = 7.8 is the boundary, and margin for A: x1 = 5.8, margin for B: x1 = 9.8  
   since the observation x1, x2 = 6,10 is closer to margin A, it would be classified as A
2. Size of margin = half-gap between margin A and B = 4/2 = 2
3. Observations 6,7,8,9 and 10 receive penalty and are support vectors
4. Penalty less than 1: 7 and 6  
   Penalty between 1 and 2: 8 and 9

Penalty between 2 and 3: 10

Total penalty: 0.5 + 0.5 + 2.5+3.5+4.5 = 11.5 points, i.e. 11.5/2 margin width = 5.75 mw

1. No, we should choose a smaller boundary, because penalty would increase.
2. x2 = -x1 +14 is a classification boundary, and the least width can be 0.2 points on either side.  
   4, 8 and 9 would be support vectors in each case