HOMEWORK-Y		
	- begg	h : one orten adignos prit (s
1) a) Ada Boost		first iterations of
b) d₁ → N	(m) - (1) 6 + (1) 6 (m) - (1)	— Eq. (14.16) farom — Eq. (14.16)
Em = 2 N=1	$N_n = \sum_{n=1}^{\infty} (\chi_n(\chi_n) + t_n)$	- Eq. (14.16) tom Blshop
bas a	No (m)	1800 of A ud bellical saim
		taset of 17 points here.
		boso at ai trigion realist
enome de s	In (1-Em)	B does make one anothe
	= 80 (1-1/17) = 80	(16 deitwest topit set of
Cr = almos Levet	1= 1 July ment conta	(16) pitoest test set of
-: (0	(m = 20 (16))	
c) Case 1: Th	e leagness made on es	191091 while choosing - the
P 0 000	w'= 1/17 (1/N)	
	enoisaeur S 70 s	exuticing a other pitch of (
MU = MU (W+1)= (U	exp om I (Ym (Xn) +)	entition a thin state of: (3 ent = 30 atriog state of! opera 3 ort to tusted opera 3 ort to tusted opera 3 ort to tusted
	. (got a of the tugted
Wr = Wr	e 2 h (16) I (Y, (2h)) + tn J
= 1 6	, In(16) = 16 and 1	
(1	<u>" </u>	
Case 2: No	09191091 made (m) = Wp = 11/1 / 3	e inditional boodisail (e)
MU (W +1)	= Wo 1 = 11/1 17 5	1 . (519)9
	17	1 1 1 1

	1 - 4 21 UM 21 1 UT
2) The samples here are: He ast.	
The decision stumps are A, Bright association	7.000 Adal800 st
AdaBoost chooses 'A' as the first.	v ← v (d
AdaBoost chooses 'A' as the first. moret (1.110.15 - (nd + (nx) M) it "nu	GM= E
It will now choose B because the one en	cample
misclassified by A is correctly classified by	
as we know the musclassified examples a	
higher weight in the neact iteration Till = m	
B does make one another error, but C make	s 2 egross.
In the first iteration of all = (TAV - 1) of =	
In the fight iteration, (mistakes made by A = 1	Total points = 7
7 (aDp): m	
Em) = 10 (1+1/7) = 10	(a) (a) (b) (b) (c) (c) (d) (d)
(in!) [N' = 'w	
3) ID data with a misoture of 2 Guassians	
exp data points = = (110, 20) nt) I me 400	ow tomor
Output of the Esten	
e Lucio I from Apen I	how = how
R = 0.4 0.6 01 = 0.0001	5 1 =
0) 1.	T.
a) likelihood function: 3 2 sloom record	
P(DIO) = TI & TK N(Xi MK, OK)	THE TOTAL STREET
i=1 $K=1$	

6) Missing weights top atting set III roiterests brosses set resta to The sent during 1.14 15 0:4660 as postale space of · Library word of rest marin sol of of $T_2 = 0 + 0.6 + 1 = 1.6 = 0.63$ # the sistement 3 to dispose on a proof ducom air agreement from set & string out no anortherest to kno sol c) Means $U_1 = (1)(1) + (0.9(10) + (0)(20) = 5 = 3.57$ $M_2 = (0)(1) + (0.6)(10) + (1)(20) = 26 = 16.25$ 1.6 4) K-means with K=2 applied to the given data After, first iteration two classes / clusters are formed with initially defined controlds as (5,3) and (6,3). Based on the earlidean distance of each point from those we find new controids for the two clusters. northogorough toget a next (1+5) & a noistromal of Centroid: $x = \frac{N}{2} \propto i$ $y = \frac{N}{2} y_1 = 0.0 = 100 \times 100 = 0$ New centroid for duster 1 x = 2(1+3+6+7+9) colue x = 6(6+3) = 08x = 25/5 = 5. ((SS) y = 1.5 (SS) New controid for cluster 2 X = 2(11+13+15+17) = 56.17 Y = 4(0+3) = 3.705 . M 8 1.19 3.00 8 2.00 1.19 3.00 1.19 3.00 1.19 3.00

the same duster as before as the euclidean distance of each point comes to be the minimum for the new centroid.
<u> </u>
This means there is no change in the two clusters and this makes
the end of iterations on the points I the final clusters
obtained are as follows areally as
Tota = 12 = (00/0) + (00/00 + 000 = 14
3 - * * * * * * * *
15 2 (5,1.6) = (14,1.6) (14,1.6) (14,1.6)
* * * * * * * * * * * * * * * * * * * *
1 3 151 7 90 M2 13/115 H17 Wellage Cax atten among (A)
5) 2 paint posception with Emax = 6.7. 4 identidence = 90x 171
(E. D. Lan (S. 2) no objectives beginged plositing office
we have my 1 (4100 (2) + 8 ye (4) 109, (13)) ye (0 1000)
we have my 1 (4 log (2) + 8 vc (4) log 2 (13)) vt co log (13)
vc dimension is 3(2+1) foor a 2 input perception.
G - 09191091 = 0.05 18 3 = 1 18 3 = x : D. v.thas
G - original = 0.05 ; $R = 1$; $R $
I restails not bisiting with
:. $m > 1$ ($4 \log_2(2)$) + $8 \times 3 \times \log_2(13)$)
m> 1 (4(4.32) + 24(8.022))
0.05 Contracts peop bloodings work
m> 209.808 => m> [4196:16] -1 011 511.00 -X
0.05 : m > ut97
The upper bound on the number of training examples is 4197.

6) vc dimension is always less than size of the hypothesis. space Toure
The maximum value that can be computed for the VC
dimension of a hypothesis is the log of the hypothesis space.
(0.0 = 3 20.0 = b 200MM)
1) a) Since the leasurer is consistent has use the formula
mx 1 (10/1) + lalt) to get a bound no mi mhere (1)
a) Since the leasurer is consistent, we use the formula m>1 (In(1) + ln H1) to get a bound on mi where (H) > 1
d = 1-0.99 =0.01 21 E = 10.06 8 + (c) = 601 8 1 1 8 10.0
M) → no. ot sectonales : xxx € (0, 199) 1 xxx € (0, 99)
possible sectionales in the space covered by our 2002 chossin
2 distinct end points along sociand societies and societies
2 distinct end points along excland accompany on < x1 → [0,199] → total 200 points
x2 → [0,99] → total 100 points (P18.178) 001 (.
[4.1816] s.m.
$2006 = 200! = 200 \times 199 = 199000 \times 100 \times 100$
198!2! 2
10022 - 100 Czade of 1001/1/2 10/0x990 = ring950 to redmun et
agi 2! 2 satia ai angitationa
Total possible siectangles = 19900 × 4950 = 98505000
(co2028P) n0 + (n(1) + 0n(9850500))
m 7, 20 (4.605 + 18.4056)
m >, 20 (23.0106)
m> [460.21]
m > 461.
The number of training examples sufficient is 461.

b) We use the formula: and are should a osimorils m> [[4] og 2 (2) + 8 + VC (H) log 5 (13)] whose, d = 0.05, E = 0.01 VC(H)=2 x no: of dimensions = 2 x3 = 60+1 m> 1 (4 x log2 (2) + 8 x 6 x log2 (13) .)= 19.0.1= 711 4 × 109240 + 48 × 1094300) 2 100 [4 x 5.3219) + 48 (10.3443)] drieg bro -2 100 (517.814) dring on botal & (P. D. C. J. :. m > 61782 - 191 = 1910005 = 1008 The number of training encomples sufficient to satisfy the required conditions is 51782. exible exectangles = 19900 x 4950 = 95 & 5000 M Z 20 (4605 +15:4056) (25.01.0A) 1. 31 of troisilles askyrnous parties to to the war as