In-class
10/28

① $(a, b, c) = (3, 8, 2)$

Centroid $= (1, 4, 8)$

Distance $= \sqrt{(3-1)^2 + (8-4)^2 + (2-8)^2}$

$= \sqrt{4 + 16 + 36} = \sqrt{56} = 7.48$

②

cluster 1			cluster 2		
X	Y	Z	X	Y	Z
2	3	4	6	3	5
1	6	3	9	8	7
2	1	5	7	2	6
1.67	3.33	4	7.33	4.33	6

$K_1 = (1.67, 3.33, 4)$

$K_2 = (7.33, 4.33, 6)$

③

cluster 1			cluster 2		
X	Y	Z	X	Y	Z
0.1089	0.1089	0	1.7689	1.7689	1
$(x_L - M_i)$ 0.4489	7.1289	1	2.7889	13.4689	1
0.1089	5.4289	1	0.1089	5.4289	0
$\sum_L (x_L - M_i)^2$ = 15.3334			27.3334		

Reconstruction Error $= \sum_i \sum_L (x_L - M_i)^2 =$ **42.6668**