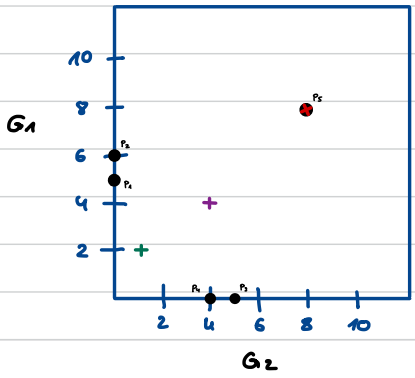
Übung 8

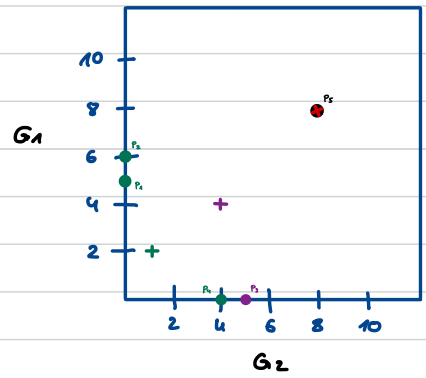
7.1) k=3

① 

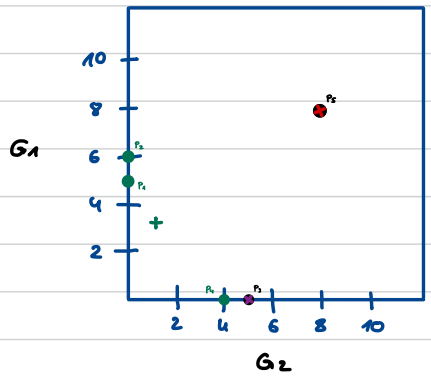
② Euklidische Distanzen:

	+	+	+
P_1	4,12	3,16	8,54
P_2	4,47	4,12	8,25
P_3	4,12	4,47	8,54
P_4	4,00	3,60	8,94
P_5	5,66	8,20	0

Bsp:
$d(P_1, +) = \sqrt{(1-0)^2 + (2-5)^2}$
$= \sqrt{10} \approx 3,16$

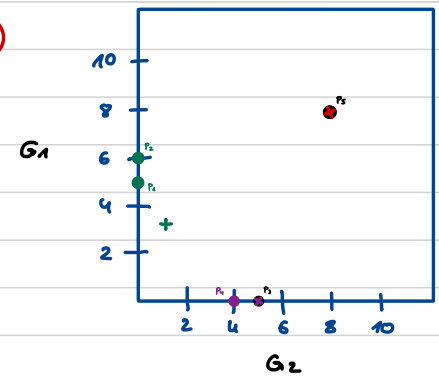
③ 

④ Berechnung Verschiebung Cluster-Zentren:
+ = $(\bar{x}|\bar{y})$ = (5|0)
+ = (1,33|3,66)
+ = (8|8)

⑤ 

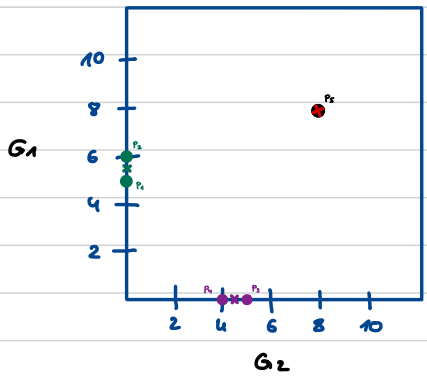
⑥

	+	+	+
P_1	7,07	2,13	8,54
P_2	7,81	2,87	8,25
P_3	0	4,95	8,54
P_4	1	4,34	8,94
P_5	8,5	7,68	0

⑦ 

⑧ Berechnung Verschiebung Cluster-Zentren:
+ = (4,5|0)
+ = (0|5,5)
+ = (8|8)

③



⑩

	+	+	+
P_1	6,72	0,5	8,54
P_2	7,5	0,5	8,25
P_3	0,5	7,43	8,54
P_4	0,5	6,8	8,94
P_5	8,73	8,38	0

=> keine weitere Verschiebung notwendig (Konvergenz)

$WSS = (4,5-5)^2 + (0-0)^2 + (4,5-4)^2 + (0-0)^2 = 0,5$

$WSS = 0$

$WSS = 0,5$

7.2)