

U_{10.2}

a)

$m_1^0 = (3, 4)^T$	$m_2^0 = (7, 4)^T$	$m_3^0 = (3, 7)^T$
$(1, 4)^T$	$(6, 2)^T$	$(1, 6)^T$
$(3, 3)^T$	$(6, 3)^T$	
$(3, 2)^T$	$(8, 4)^T$	
$(4, 1)^T$	$(8, 5)^T$	
$(4, 3)^T$	$(8, 6)^T$	
$(5, 1)^T$		

$(3, 4)^T$	$(3, 7)^T$
$\begin{pmatrix} 1 \\ 5 \end{pmatrix} : \sqrt{(3-1)^2 + (5-4)^2} = \sqrt{5}$	$\begin{pmatrix} 1 \\ 5 \end{pmatrix} : \sqrt{(3-1)^2 + (7-5)^2} = \sqrt{8}$
$\begin{pmatrix} 1 \\ 6 \end{pmatrix} : \sqrt{(3-1)^2 + (4-6)^2} = \sqrt{8}$	$\begin{pmatrix} 1 \\ 6 \end{pmatrix} : \sqrt{(3-1)^2 + (7-6)^2} = \sqrt{5}$
$\begin{pmatrix} 5 \\ 1 \end{pmatrix} : \sqrt{(3-5)^2 + (4-1)^2} = \sqrt{13}$	$\begin{pmatrix} 5 \\ 1 \end{pmatrix} : \sqrt{(7-5)^2 + (4-1)^2} = \sqrt{13}$

$$m_1^1 = \left(\frac{1+3+3+4+1+5}{4+3+2+1+3+1} \right) \cdot \frac{1}{6} = \frac{1}{6} \begin{pmatrix} 17 \\ 14 \end{pmatrix} = \begin{pmatrix} 2,83 \\ 2,33 \end{pmatrix}$$

$$m_2^1 = \left(\frac{6+6+8+8+8}{2+3+4+5+6} \right) \cdot \frac{1}{5} = \frac{1}{5} \begin{pmatrix} 36 \\ 20 \end{pmatrix} = \begin{pmatrix} 7,2 \\ 4 \end{pmatrix}$$

$$m_3^1 = \begin{pmatrix} 1 \\ 6 \end{pmatrix}$$

b)

$m_1^1 = (2,83, 2,33)^T$	$m_2^1 = (7,2, 4)^T$	$m_3^1 = (1,6)^T$
$(3, 2)^T$	$(6, 2)^T$	$(1, 4)^T$
$(3, 3)^T$	$(6, 3)^T$	$(1, 5)^T$
$(4, 1)^T$	$(8, 4)^T$	$(1, 6)^T$
$(5, 1)^T$	$(8, 5)^T$	
	$(8, 6)^T$	

$$m_1^2 = \left(\frac{3+3+4+5}{2+3+1+1} \right) \cdot \frac{1}{4} = \frac{1}{4} \begin{pmatrix} 15 \\ 7 \end{pmatrix} = \begin{pmatrix} 3,75 \\ 1,75 \end{pmatrix}$$

$$m_2^2 = \frac{1}{5} \begin{pmatrix} 6+6+8+8+8 \\ 2+3+4+5+6 \end{pmatrix} = \frac{1}{5} \begin{pmatrix} 36 \\ 20 \end{pmatrix} = \begin{pmatrix} 7,2 \\ 4 \end{pmatrix}$$

$$m_3^2 = \frac{1}{3} \begin{pmatrix} 1+1+1 \\ 4+5+6 \end{pmatrix} = \frac{1}{3} \begin{pmatrix} 3 \\ 15 \end{pmatrix} = \begin{pmatrix} 1 \\ 5 \end{pmatrix}$$

Punkt $(6, 2)^T$ testen: $\sqrt{\frac{(3,75-6)^2}{1,75-2}} = 2,26$ Punkt $(6, 2)^T$ liegt in m_1

$\sqrt{\frac{(7,2-6)^2}{4-2}} = 2,33$