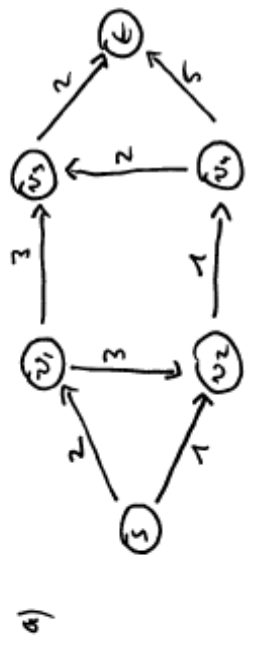


Mat 7, A1



b)

	(s)	(v_1)	(v_2)	(v_3)	(t)	(v_1)	(v_2)	(v_3)	(t)
(s)	1	0	0	0	0	0	0	0	0
(v_1)	-1	1	1	0	0	0	0	0	0
(v_2)	0	-1	0	1	0	0	0	0	0
(v_3)	0	0	-1	0	-1	0	-1	1	0
(t)	0	0	0	0	-1	1	1	0	1

$\max \sum_{i=1}^8 c_i x_i = \max \sum_{i=1}^8 -c_i x_i$

Knoten/
Kanten
Zurück-
matrix
obere letzte
Zeile

$$b \downarrow \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \end{pmatrix} = \begin{pmatrix} x_1 \\ \vdots \\ x_8 \end{pmatrix} \rightarrow (L)$$

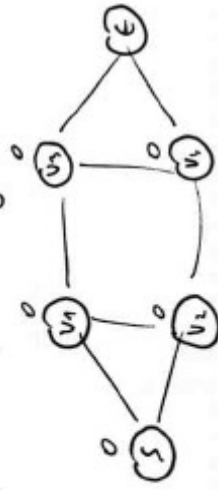
(D) \rightarrow

$u_1 - u_2$	≥ -2
$u_1 - u_3$	≥ -1
$u_2 - u_3$	≥ -3
$u_2 - u_4$	≥ -3
$u_3 - u_5$	≥ -1
$u_3 - u_4$	
$u_3 - u_4$	≥ -2
u_4	≥ -2
u_5	≥ -5

mit $u = (1, 0, 0, 0, 0) \cdot u = u_1$

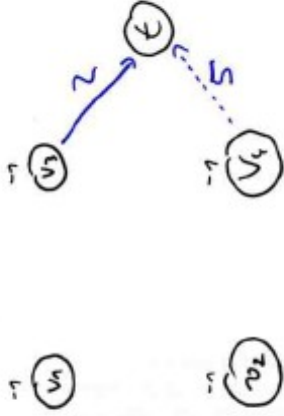
$u = 0$ ist Lösung

Finde kürzesten Weg:



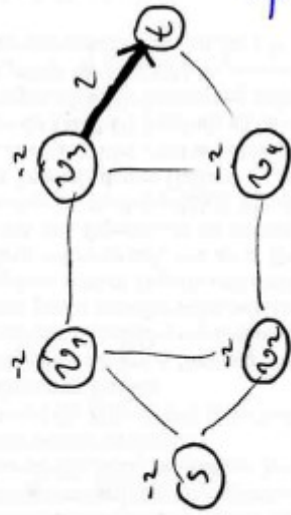
$u_D = 0$

$\rightarrow J = \emptyset \rightarrow S$



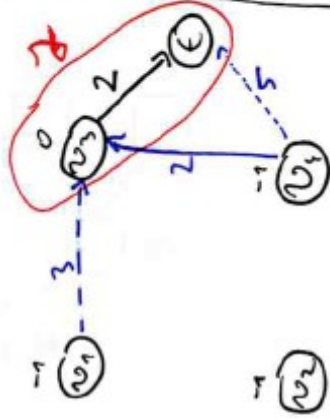
setze $z=2$
 \Rightarrow neues $J = \{v_3, t\}$

DRP:
 min u_4
 $u_4 \geq -1$
 $u_5 \geq -1$
 (Folie 128)
 Lsg:
 $u = (-1, -1, \dots, -1)$



$u_D = u_{alt} + z \cdot (-1, \dots, -1)$
 \uparrow
 z u_{DRP}

7. Kunde \uparrow
 $\rightarrow J = \{v_3, t\}$



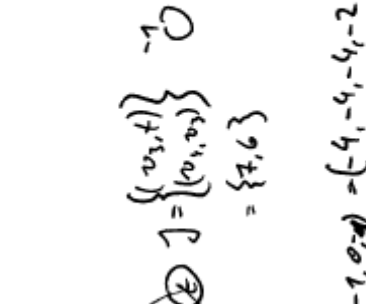
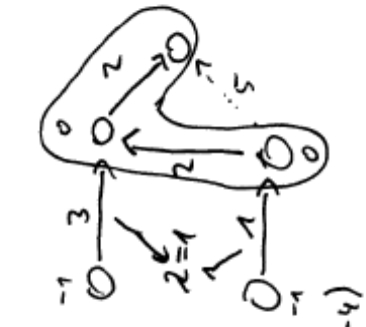
setze $z=2$
 \Rightarrow neues $J = \{v_3, t, v_4, v_5\}$

DRP:
 min u_4
 $u \geq (-1, \dots, -1)$
 $(0, 0, \dots, 0) \cdot u \geq 0$
 $\Rightarrow u_4 \geq 0$
 Lsg:
 $u = (-1, -1, \dots, 0, -1)$

$\Rightarrow u_D = (-2, -2, -2, -2, -2)$

DRP

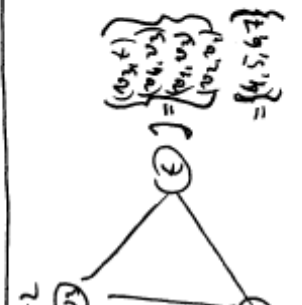
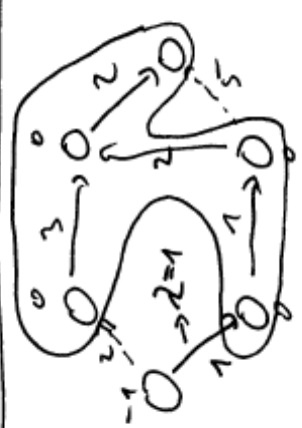
$\min u_1$
 $u \geq (-1, \dots, -1)$
 $u_4 \geq 0$
 $-u_4 + u_5 \geq 0$
 LSG: $(-1, -1, -1, 0, 0) = u_{\text{opt}}$
 (vgl. Folie 134)



$u_D = (-2, -2, -2, -2) + 2 \cdot (-1, -1, -1, 0, 0) = (-4, -4, -4, -2, -4)$

DRP

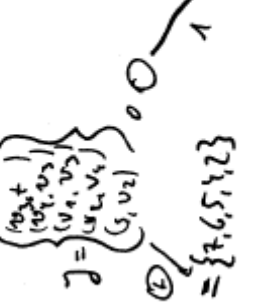
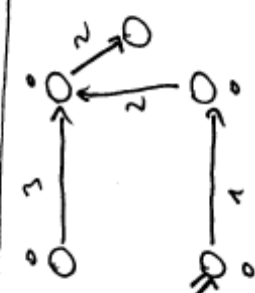
$\min u_1$
 $u \geq (-1, \dots, -1)$
 $u_4 \geq 0$
 $-u_4 + u_5 \geq 0$
 $u_3 - u_5 \geq 0$
 $u_2 - u_4 \geq 0$
 LSG: $(-1, 0, 0, 0, 0)$



$u_D = (-4, -4, -4, -2, -4) + 1 \cdot (-1, -1, -1, 0, 0) = (-5, -5, -5, -2, -4)$

DRD

$\min u_1$
 $u \geq (-1, \dots, -1)$
 $u_4 \geq 0$
 $-u_4 + u_5 \geq 0$
 $u_3 - u_5 \geq 0$
 $u_2 - u_4 \geq 0$
 LSG: $(0, 0, 0, 0, 0)$
 → optimal!



$u_D = (-5, -5, -5, -2, -4) + 1 \cdot (-1, 0, 0, 0, 0) = (-6, -5, -5, -2, -4)$