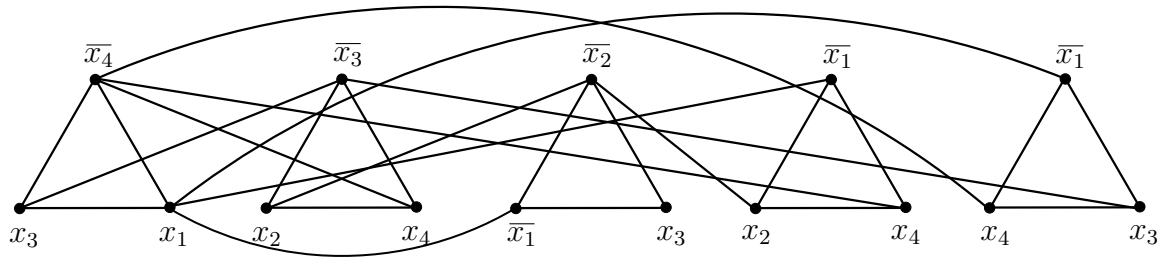


# Algorithmen und Datenstrukturen 2

## Übungsblatt 1

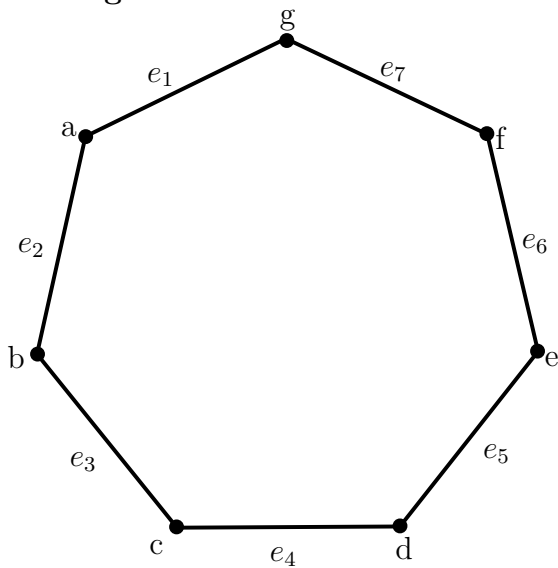
### Aufgabe 2.

Lösung.



### Aufgabe 3.

Lösung.



$$U = \{e_1, e_2, e_3, e_4, e_5, e_6, e_7\}$$

$$k = 3$$

$$S_a = \{e_1, e_2\}$$

$$S_b = \{e_2, e_3\}$$

$$S_c = \{e_3, e_4\}$$

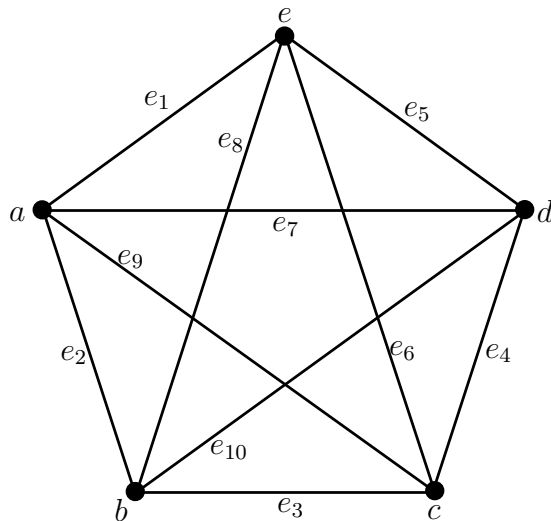
$$S_d = \{e_4, e_5\}$$

$$S_e = \{e_5, e_6\}$$

$$S_f = \{e_6, e_7\}$$

$$S_g = \{e_1, e_7\}$$

SET COVER  $S = \{S_a, S_c, S_e, S_f\} \rightarrow |S| > k \rightarrow$  Nein-Instanz  $\rightarrow$  VERTEX COVER  
 Instanzen auch Nein-Instanzen



$$U = \{e_1, e_2, e_3, e_4, e_5, e_6, e_7, e_8, e_9, e_{10}\}$$

$$k = 4$$

$$S_a = \{e_1, e_2, e_8, e_9\}$$

$$S_b = \{e_2, e_3, e_9, e_{10}\}$$

$$S_c = \{e_3, e_4, e_6, e_9\}$$

$$S_d = \{e_4, e_5, e_7, e_{10}\}$$

$$S_e = \{e_1, e_5, e_6, e_8\}$$

SET COVER  $S = \{S_a, S_c, S_d\} \rightarrow |S| \leq k \rightarrow$  Ja-Instanz  $\rightarrow$  VERTEX COVER Instanzen  
auch Ja-Instanzen

### Aufgabe 7.

### Lösung.

Gegenstand	1	2	3	4
Gewicht $g_i$	10	33	48	28
Wert $w_i$	1	11	12	10
Verhältnis $w_i/g_i$	0.1	0.33	0.25	0.35

