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|  | VI Lineare Gleichungssysteme, Check-out |  |  |
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Check-out Kapitel VI

Schätze dich mithilfe der Checkliste ein.

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|  | Checkliste |  |  |  | Lerntipps | zum Nacharbeiten |
| 1. | Ich kann lineare Gleichungen mit zwei Variablen rechnerisch und grafisch lösen. | 🞎 | 🞎 | 🞎 | Beispiel auf Seite 165 | Seite 186: A. 1, 2, 3 und 4  Seite 193: Runde 1 A. 1 |
| 2. | Ich kann lineare Gleichungssysteme grafisch lösen. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf Seite 170 | Seite 186: A. 5  Seite 193: Runde 2 A. 1 |
| 3. | Ich kann lineare Gleichungssysteme mithilfe des Gleichsetzungsverfahrens lösen. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf Seite 174 | Seite 186: A. 6  Seite 193: Runde 1 A. 2 |
| 4. | Ich kann lineare Gleichungssysteme mithilfe des Einsetzungsverfahrens lösen. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf Seite 174 | Seite 186: A. 7 und 8 |
| 5. | Ich kann die Lösungsvielfalt linearer Gleichungssysteme grafisch bzw. rechnerisch prüfen. | 🞎 | 🞎 | 🞎 | Beispiel 2 auf S. 170  Beispiel 2 auf S. 175 | Seite 187: A. 13 und 14  Seite 193: Runde 1 A. 4 |
| 6. | Ich kann lineare Gleichungssysteme mithilfe des Additionsverfahrens lösen. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf S. 179 | Seite 186: A. 9  Seite 187: A. 12 |
| 7. | Ich kann geeignete Lösungsverfahren für lineare Gleichungssysteme erkennen. | 🞎 | 🞎 | 🞎 | Beispiel 2 auf S. 179 | Seite 187: A. 10  Seite 188: A. 15  Seite 193: Runde 1 A. 3  Seite 193: Runde 2 A. 2 |
| 8. | Ich kann Probleme mit Gleichungssystemen lösen. | 🞎 | 🞎 | 🞎 | Beispiel auf S. 183 | Seite 187: A. 11  Seite 188: A. 16, 17, 18, 19  Seite 189: A. 20, 21 und 22  Seite 193: Runde 1 A. 5  Seite 193: Runde 2 A. 3, 4 |

Überprüfe deine Einschätzung.



Zu 1. **Lineare Gleichungen rechnerisch und grafisch lösen**

Gegeben ist die Gleichung .

a) Löse die Gleichung nach y auf und stelle die Lösungen der Gleichung grafisch dar.

b) Lies mithilfe des Graphen zwei Lösungen der Gleichung ab und kontrolliere dein Ergebnis rechnerisch.

c) Löse die Gleichung nach x auf und ermittle den Wert für x, wenn ist.

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|  | VI Lineare Gleichungssysteme, Check-out |  |  |
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Zu 2. **Lineare Gleichungssysteme grafisch lösen**

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| a) Bestimme die Lösung des Gleichungssystems grafisch und mache anschließend die Probe.  b) Bestimme die Lösung des Gleichungssystems grafisch mithilfe einer dynamischen Geometrie-Software. |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |



Zu 3. **Lineare Gleichungssysteme mithilfe des Gleichsetzungsverfahrens lösen**

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| a) Löse das Gleichungssystem mit dem Gleichsetzungsverfahren.    b) Berechne die Koordinaten des Schnittpunkts der beiden Geraden.  I:\Klett_WORD\733482_und_733484_LS8 NW\733482_Schmuckelemente\Kapitel 6\SE96733482_G_K06_S097_01.png |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |



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| Zu 4. Lineare Gleichungs­systeme mithilfe des Einsetzungsverfahrens lösen  Löse das Gleichungssystem mithilfe des Einsetzungsverfahrens. |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

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|  | VI Lineare Gleichungssysteme, Check-out |  |  |
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Zu 5. Lösungsvielfalt linearer Gleichungssysteme rechnerisch bzw. grafisch prüfen

a) Prüfe grafisch, ob das lineare Gleichungssystem keine, eine oder unendlich viele Lösungen hat.

b) Überprüfe jeweils rechnerisch, wie viele A: B:

Lösungen das Gleichungssystem hat.

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Zu 6. Lineare Gleichungssysteme mithilfe des Additionsverfahrens lösen

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| Löse das lineare Gleichungssystem mithilfe des Additionsverfahrens: |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |



Zu 7. Geeignete Lösungsverfahren für lineare Gleichungssysteme erkennen

Löse ein Gleichungssystem mit dem Gleichsetzungsverfahren, eines mit dem Einsetzungsverfahren und eines mit dem Additionsverfahren. Erläutere deine Wahl.

a) b) c)

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|  | VI Lineare Gleichungssysteme, Check-out |  |  |
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Zu 8. Probleme mit Gleichungssystemen lösen

a) Zwei Kaffeesorten haben verschiedene Preise. Kauft man 5 kg der ersten und 3 kg der zweiten Sorte, dann muss man 120,90 € bezahlen. Kauft man 3 kg der ersten und 5 kg der zweiten Sorte, dann muss man 123,10 € bezahlen. Bestimme den Preis für 1 kg jeder Kaffeesorte.

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| b) Felix läuft mit konstanten 12 eine Runde um den Otto-Maigler-See. Er startet die 7,8 km lange Strecke am Strandbad. Susanne startet 3 Minuten später und läuft in die entgegengesetzte Richtung. Sie läuft mit konstanten 15 . Berechne, wie lange Felix laufen muss, bis er auf Susanne trifft. Bestimme, wie weit die beiden zu diesem Zeitpunkt von dem Strandbad entfernt sind. |  | I:\Klett_WORD\733482_und_733484_LS8 NW\733482_Schmuckelemente\Fotos\Kap6\RO-8DA6_sw_klein.png |

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|  | VI Lineare Gleichungssysteme, Check-out | Lösungen |  |
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Check-out Kapitel VI, S 109 – S 112

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| 1 a)  b) :  (wahr)  :  (wahr)  c) |  | I:\Klett_WORD\733482_und_733484_LS8 NW\733482_Schmuckelemente\Kapitel 6\SE96733482_G_K06_S096_Loes1.png |

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| 2 a)      Die zu dieser linearen Funktion gehörende Gleichung wurde in das Koordinatensystem eingezeichnet.  in I: (wahr)  in II: (wahr) |  | I:\Klett_WORD\733482_und_733484_LS8 NW\733482_Schmuckelemente\Kapitel 6\SE96733482_G_K06_S097_Loes2_a.png |

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| b) |  | I:\Klett_WORD\733482_und_733484_LS8 NW\733482_Schmuckelemente\Kapitel 6\SE96733482_G_K06_S097_Loes2_b.png  Die Lösung ist und |

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| 3 a)  Gleichsetzen:      in    Probe:  in (wahr)  in (wahr)  Die Lösung ist und . |  | b) f:  g:  Gleichsetzen:      in  Probe:  in (wahr)  in (wahr)  Der Schnittpunkt ist |

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|  | VI Lineare Gleichungssysteme, Check-out | Lösungen |  |
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Probe: in (wahr)

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Die Lösung ist und .

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| 5 a) Nach a auflösen:        I:\Klett_WORD\733482_und_733484_LS8 NW\733482_Schmuckelemente\Kapitel 6\SE96733482_G_K06_S098_Loes1.png  Das lineare Gleichungssystem hat keine Lösung. |  | b) A:  in I:        Es gibt kein x, das diese Gleichung  erfüllt. Das Gleichungssystem hat  keine Lösung.  B: in II:      Diese Gleichung ist für jede Zahl x  erfüllt. Das Gleichungssystem hat  unendlich viele Lösungen. |

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| 6 |  | in |  | in I:  (wahr)  in II:  (wahr)  Die Lösung ist und . |

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| 7 a) Einsetzungsverfahren:  in        in  Probe: in  (wahr)  () in II: (wahr)  Die Lösung ist und . |  | b) Additionsverfahren:      :    in      Probe: () in I:  (wahr)  (wahr)  Die Lösung ist und . |  | c) Gleichsetzungsverfahren:      Gleichsetzen:        in    Probe: () in I:  (wahr)  () in II:  (wahr)  Die Lösung ist und | | |
|  | VI Lineare Gleichungssysteme, Check-out | | | | | | Lösungen |  | |
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8 a) **Gesucht:** Preis für jeweils 1 kg der beiden Kaffeesorten.

**Gegeben und wichtig:** Der Preis für 5 kg der ersten und 3 kg der zweiten Sorte beträgt 120,90 €.

Der Preis für 3 kg der ersten und 5 kg der zweiten Sorte beträgt 123,10 €.

**Gesuchte Größen mit Variablen benennen:**

Preis für 1 kg der ersten Kaffeesorte: x; Preis für 1 kg der zweiten Kaffeesorte: y

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| **Aufstellen eines Gleichungssystems:**      **Lösen des Gleichungssystems:**          in |  | **Probe:** und in  (wahr)  und in  (wahr)  **Kontrolle und Antwort:**  5 kg der ersten Sorte und 3 kg der zweiten Sorte kosten zusammen 120,90 €, 3 kg der ersten und 5 kg der zweiten Sorte kosten zusammen 123,10 €. Die Preise stimmen also.  1 kg der ersten Sorte kostet also 14,70 €, 1kg der zweiten Sorte kostet 15,80 €. |

b) **Gesucht:** Laufzeit von Felix und Entfernung der beiden zum Strandbad

**Gegeben und wichtig:** Felix läuft konstant mit 12, Susanne mit konstant 15.

Susanne startet 3 Minuten nach Felix, die Runde ist 7,8 km lang.

**Gesuchte Größen mit Variablen benennen:**

Laufzeit von Felix in Minuten: x; Laufzeit von Susanne in Minuten: y

**Aufstellen eines Gleichungssystems:**

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| **Lösen des Gleichungssystems:**  in          in |  | **Probe:** und in  (wahr)  und in  (wahr)  **Kontrolle und Antwort:**  Felix läuft 3 Minuten länger als Susanne.  Zusammen kommen die beiden auf eine Wegstrecke von 7,8 m, wobei Felix in 19 Minuten 3,8 km zurücklegt und Susanne in 16 Minuten 4 km. Die beiden sind also 3,8 km von dem Strandbad entfernt. |