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|  | IV Potenzen und Potenzgesetze, Check-out |  |  |  |
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Check-out Kapitel IV

Schätze dich mithilfe der Checkliste ein.

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|  | Checkliste |  |  |  | Lerntipps | zum Nacharbeiten |
| 1. | Ich kann Potenzen mit ganzzahligen Exponenten berechnen. | 🞎 | 🞎 | 🞎 | Merkkasten auf Seite 106  Beispiel 1 auf Seite 107 | Seite 108: A7, A8  Seite 130: A1, A3  Seite 130: A1 |
| 2. | Ich kann Zahlen ohne Zehnerpotenzen in die wissenschaftliche Schreibweise umwandeln und umgekehrt. | 🞎 | 🞎 | 🞎 | Merkkasten auf Seite 110  Beispiel auf Seite 111 | Seite 112: A7, A8  Seite 113: A14  Seite 130: A5 |
| 3. | Ich kann Terme mit Potenzen durch Anwendung der Potenzgesetze geschickt berechnen. | 🞎 | 🞎 | 🞎 | Merkkasten auf Seite 114  Beispiel 1 auf Seite 115  Merkkasten und Beispiel 1 auf Seite 118  Beispiel 2 auf Seite 119 | Seite 116: A7  Seite 117: A15, A16  Seite 119: A7  Seite 130: A8 |
| 4. | Ich kann Potenzen potenzieren. | 🞎 | 🞎 | 🞎 | Merkkasten und Beispiel 1 auf Seite 121  Beispiel 2 auf Seite 122 | Seite 123: A8, A9  Seite 130: A9 |
| 5. | Ich kann die n-te Wurzel ziehen und Potenzen mit rationalen Exponenten berechnen. | 🞎 | 🞎 | 🞎 | Merkkasten und Beispiele auf Seite 127 | Seite 128: A8, A9  Seite 129: A14  Seite 131: A12 |

Überprüfe deine Einschätzung.



Zu 1. **Potenzen mit ganzzahligen Exponenten berechnen**

Berechne.

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| a) |  | b) |
| c) |  | d) |
| e) |  | f) |



Zu 2. **Zahlen ohne Zehnerpotenzen und in wissenschaftlicher Schreibweise darstellen**

a) Notiere die Zahlen in der jeweils anderen Schreibweise in der Tabelle.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Planet | Durchmesser (in km) | | größte Entfernung zur Erde (in km) | |
| ohne Zehnerpotenzen | wissenschaftliche Schreibweise | wissenschaftliche Schreibweise | ohne Zehnerpotenzen |
| Mars |  |  |  |  |
| Saturn |  |  |  |  |
| Neptun |  |  |  |  |

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| b) Schreibe die Zahlen ohne Verwendung von Zehnerpotenzen. |  | c) Notiere die Zahlen in wissenschaftlicher Schreibweise. |

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|  | IV Potenzen und Potenzgesetze, Check-out |  |  |  |
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Zu 3.Terme mit Potenzen geschickt berechnen

a) Vereinfache mithilfe der Potenzgesetze und berechne.

1) 2)

3) 4)

5) 6)

7) 8)

9)

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| b) Ein Funksignal legt in einer Sekunde zurück. Berechne, wie lange ein Signal von einer Raumsonde im ungünstigsten Fall (größter Abstand) vom Pluto zur Erde benötigt.  Die größte Entfernung zwischen dem Zwergplaneten Pluto und der Erde beträgt etwa . |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

Zu 4. **Potenzen potenzieren**

Berechne.

a) b)

c) d)

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|  | IV Potenzen und Potenzgesetze, Check-out |  |  |  |
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Zu 5. **Potenzen mit rationalen Exponenten berechnen und vereinfachen**

a) Berechne.

1)   2)   \_\_\_\_\_\_\_

3) 4)

5) 6)

b) Vereinfache den Term. Es gilt x, .

1)   2)  \_\_\_\_\_\_\_

3)  \_\_\_\_\_\_\_ 4)  \_\_\_\_\_\_\_

5)  \_\_\_\_\_\_\_ 6)  \_\_\_\_\_\_\_

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|  | IV Potenzen und Potenzgesetze, Check-out |  | Lösungen |  |
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Check-out Kapitel IV, S 82 – S 84

1 a) b)

c) d)

e) f)

2 a)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Planet | Durchmesser (in km) | | größte Entfernung zur Erde (in km) | |
| ohne Zehnerpotenzen | wissenschaftliche Schreibweise | wissenschaftliche Schreibweise | ohne Zehnerpotenzen |
| Mars |  |  |  | 400 000 000 |
| Saturn |  |  |  | 1 658 000 000 |
| Neptun |  |  |  | 4 689 000 000 |

|  |  |  |
| --- | --- | --- |
| b) |  | c) |

3 a) 1)

2)

3)

4)

5)

6)

7)

8)

9)

b)

Das Funksignal vom Pluto würde im ungünstigsten Fall etwa 7 Stunden bis zur Erde benötigen.

4 a) b)

c) d)

5 a) 1) 2)

3) 4)

5) 6)

b) 1) 2)

3) 4)

5) 6)