



Aufgabenblatt zu Potenzen mit rationalem Exponenten

Lösungen

Level 1 – Grundlagen – Blatt 4

Lösung A1

a) $(2 \cdot 3)^{\frac{1}{2}} = 6^{\frac{1}{2}}$	b) $(6 \cdot 7)^{\frac{1}{4}} = 42^{\frac{1}{4}}$	c) $(3 \cdot 4)^{\frac{1}{3}} = 12^{\frac{1}{3}}$	d) $(4 \cdot 5)^{\frac{1}{7}} = 20^{\frac{1}{7}}$
e) $(2 \cdot 3 \cdot 4)^{\frac{1}{2}} = 24^{\frac{1}{2}}$	f) $(3 \cdot 4 \cdot 5)^{\frac{1}{3}} = 60^{\frac{1}{3}}$	g) $210^{\frac{1}{4}}$	h) $24^{\frac{1}{7}}$
i) $(2 \cdot 3)^{-3} = 6^{-\frac{1}{3}}$	j) $(6 \cdot 7)^{-5} = 42^{-\frac{1}{5}}$	k) $(3 \cdot 4)^{-\frac{1}{3}} = 12^{-\frac{1}{3}}$	l) $20^{-\frac{1}{7}} = \frac{1}{20^{\frac{1}{7}}}$
m) $24^{-\frac{1}{2}} = \frac{1}{24^{\frac{1}{2}}}$	n) $60^{-\frac{1}{3}} = \frac{1}{60^{\frac{1}{3}}}$	o) $210^{-\frac{1}{4}} = \frac{1}{210^{\frac{1}{4}}}$	p) $6^{-\frac{1}{7}} = \frac{1}{6^{\frac{1}{7}}}$

Lösung A2

a) $(x \cdot y)^{\frac{1}{2}}$	b) $(y \cdot z)^{\frac{1}{4}}$	c) $(a \cdot b)^{\frac{1}{3}}$	d) $(c \cdot d)^{\frac{1}{7}}$
e) $(l \cdot m \cdot n)^{\frac{1}{2}}$	f) $(x \cdot y \cdot z)^{\frac{1}{3}}$	g) $(d \cdot e \cdot f)^{\frac{1}{4}}$	h) $(a \cdot b \cdot c \cdot d)^{\frac{1}{7}}$
i) $(x \cdot y)^{-\frac{1}{3}}$	j) $(y \cdot z)^{-\frac{1}{4}}$	k) $(a \cdot b)^{-\frac{1}{3}}$	l) $(c \cdot d)^{-\frac{1}{7}}$
m) $(l \cdot m \cdot n)^{-\frac{1}{2}}$	n) $(x \cdot y \cdot z)^{-\frac{1}{3}}$	o) $(d \cdot e \cdot f)^{-\frac{1}{4}}$	p) $(a \cdot b \cdot c)^{-\frac{1}{7}}$

Lösung A3

a) $3 \cdot 6^{\frac{1}{2}}$	b) $2 \cdot 42^{\frac{1}{4}}$	c) $5 \cdot 12^{\frac{1}{3}}$	d) $6 \cdot 20^{\frac{1}{7}}$
e) $3 \cdot 24^{\frac{1}{2}}$	f) $4 \cdot 60^{\frac{1}{3}}$	g) $2 \cdot 210^{\frac{1}{4}}$	h) $4 \cdot 24^{\frac{1}{7}}$
i) $3 \cdot 6^{-\frac{1}{3}} = \frac{3}{6^{\frac{1}{3}}}$	j) $2 \cdot 42^{-\frac{1}{5}} = \frac{2}{42^{\frac{1}{5}}}$	k) $5 \cdot 12^{-\frac{1}{3}} = \frac{5}{12^{\frac{1}{3}}}$	l) $6 \cdot 20^{-\frac{1}{7}} = \frac{6}{20^{\frac{1}{7}}}$
m) $3 \cdot 24^{-\frac{1}{2}} = \frac{3}{24^{\frac{1}{2}}}$	n) $4 \cdot 60^{-\frac{1}{3}} = \frac{4}{60^{\frac{1}{3}}}$	o) $2 \cdot 210^{-\frac{1}{4}} = \frac{2}{210^{\frac{1}{4}}}$	p) $4 \cdot 6^{-\frac{1}{7}} = \frac{4}{6^{\frac{1}{7}}}$

Lösung A4

a) $3 \cdot (x \cdot y)^{\frac{1}{2}}$	b) $7 \cdot (y \cdot z)^{\frac{1}{4}}$	c) $5 \cdot (a \cdot b)^{\frac{1}{3}}$	d) $6 \cdot (c \cdot d)^{\frac{1}{7}}$
e) $3 \cdot (l \cdot m \cdot n)^{\frac{1}{2}}$	f) $4 \cdot (x \cdot y \cdot z)^{\frac{1}{3}}$	g) $2 \cdot (d \cdot e \cdot f)^{\frac{1}{4}}$	h) $4 \cdot (a \cdot b \cdot c \cdot d)^{\frac{1}{7}}$
i) $3 \cdot (x \cdot y)^{-\frac{1}{3}}$	j) $2 \cdot (y \cdot z)^{-\frac{1}{4}}$	k) $5 \cdot (a \cdot b)^{-\frac{1}{3}}$	l) $6 \cdot (c \cdot d)^{-\frac{1}{7}}$
m) $3 \cdot (l \cdot m \cdot n)^{-\frac{1}{2}}$	n) $4 \cdot (x \cdot y \cdot z)^{-\frac{1}{3}}$	o) $2 \cdot (d \cdot e \cdot f)^{-\frac{1}{4}}$	p) $4 \cdot (a \cdot b \cdot c)^{-\frac{1}{7}}$

Lösung A5

a) $12 \cdot 6^{\frac{1}{2}}$	b) $6 \cdot 42^{\frac{1}{2}}$	c) $20 \cdot 12^{\frac{1}{3}}$	d) $30 \cdot 20^{\frac{1}{7}}$
e) $12 \cdot 24^{\frac{1}{2}}$	f) $8 \cdot 60^{\frac{1}{3}}$	g) $6 \cdot 210^{\frac{1}{4}}$	h) $24 \cdot 6^{\frac{1}{7}}$
i) $12 \cdot 6^{-\frac{1}{3}} = \frac{12}{6^{\frac{1}{3}}}$	j) $6 \cdot 42^{-\frac{1}{5}} = \frac{6}{42^{\frac{1}{5}}}$	k) $20 \cdot 12^{-\frac{1}{3}} = \frac{20}{12^{\frac{1}{3}}}$	l) $18 \cdot 20^{-\frac{1}{7}} = \frac{18}{20^{\frac{1}{7}}}$
m) $12 \cdot 16^{-\frac{1}{2}} = \frac{12}{16^{\frac{1}{2}}}$	n) $4 \cdot 15^{-\frac{1}{3}} = \frac{4}{15^{\frac{1}{3}}}$	o) $6 \cdot 30^{-\frac{1}{4}} = \frac{6}{30^{\frac{1}{4}}}$	p) $8 \cdot 3^{-\frac{1}{7}} = \frac{8}{3^{\frac{1}{7}}}$



Aufgabenblatt zu Potenzen mit rationalem Exponenten

Potenzen
Lösungen

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Lösung A6

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|-----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| a) $12 \cdot (xy)^{\frac{1}{2}}$ | b) $6 \cdot (yz)^{\frac{1}{4}}$ | c) $20 \cdot (ab)^{\frac{1}{3}}$ | d) $30 \cdot (cd)^{\frac{1}{7}}$ |
| e) $12 \cdot (lmn)^{\frac{1}{2}}$ | f) $8 \cdot (xyz)^{\frac{1}{3}}$ | g) $6 \cdot (def)^{\frac{1}{4}}$ | h) $8 \cdot (abc)^{\frac{1}{7}}$ |
| i) $12 \cdot (xy)^{-\frac{1}{3}}$ | j) $6 \cdot (yz)^{-\frac{1}{4}}$ | k) $20 \cdot (ab)^{-\frac{1}{3}}$ | l) $30 \cdot (cd)^{-\frac{1}{7}}$ |
| m) $12 \cdot (lm)^{-\frac{1}{2}}$ | n) $8 \cdot (xy)^{-\frac{1}{3}}$ | o) $6 \cdot (de)^{-\frac{1}{4}}$ | p) $8 \cdot (ab)^{-\frac{1}{7}}$ |

Lösung A7

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|------------------------|------------------------|-------------------------|--|
| a) $6^{\frac{1}{a}}$ | b) $42^{\frac{1}{c}}$ | c) $12^{\frac{1}{x}}$ | d) $20^{\frac{1}{k}}$ |
| e) $24^{\frac{1}{l}}$ | f) $60^{\frac{1}{a}}$ | g) $210^{\frac{1}{b}}$ | h) $6^{\frac{1}{a}} \cdot 20^{\frac{1}{b}}$ |
| i) $6^{-\frac{1}{a}}$ | j) $42^{-\frac{1}{c}}$ | k) $12^{-\frac{1}{x}}$ | l) $20^{-\frac{1}{k}}$ |
| m) $24^{-\frac{1}{l}}$ | n) $60^{-\frac{1}{a}}$ | o) $210^{-\frac{1}{b}}$ | p) $6^{-\frac{1}{a}} \cdot 4^{-\frac{1}{b}}$ |

Lösung A8

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|---------------------------|---------------------------|---------------------------|--|
| a) $(xy)^{\frac{1}{a}}$ | b) $(yz)^{\frac{1}{c}}$ | c) $(ab)^{\frac{1}{x}}$ | d) $(cd)^{\frac{1}{k}}$ |
| e) $(mno)^{\frac{1}{l}}$ | f) $(def)^{\frac{1}{a}}$ | g) $(uvw)^{\frac{1}{y}}$ | h) $(ac)^{\frac{1}{l}} \cdot (bd)^{\frac{1}{m}}$ |
| i) $(xy)^{-\frac{1}{a}}$ | j) $(yz)^{-\frac{1}{c}}$ | k) $(3ab)^{-\frac{1}{x}}$ | l) $(cd)^{-\frac{1}{k}}$ |
| m) $(mno)^{-\frac{1}{l}}$ | n) $(def)^{-\frac{1}{a}}$ | o) $(uvw)^{-\frac{1}{y}}$ | p) $(abc)^{-\frac{1}{a}}$ |

Lösung A9

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|---------------------------------|--------------------------------|---------------------------------|--|
| a) $12 \cdot 6^{\frac{1}{a}}$ | b) $6 \cdot 42^{\frac{1}{c}}$ | c) $20 \cdot 12^{\frac{1}{x}}$ | d) $30 \cdot 20^{\frac{1}{k}}$ |
| e) $12 \cdot 24^{\frac{1}{l}}$ | f) $8 \cdot 60^{\frac{1}{a}}$ | g) $6 \cdot 210^{\frac{1}{b}}$ | h) $8 \cdot 6^{\frac{1}{a}} \cdot 4^{\frac{1}{b}}$ |
| i) $12 \cdot 6^{-\frac{1}{a}}$ | j) $6 \cdot 42^{-\frac{1}{c}}$ | k) $20 \cdot 12^{-\frac{1}{x}}$ | l) $30 \cdot 20^{-\frac{1}{k}}$ |
| m) $12 \cdot 10^{-\frac{1}{l}}$ | n) $8 \cdot 15^{-\frac{1}{a}}$ | o) $6 \cdot 30^{-\frac{1}{b}}$ | p) $8 \cdot 8^{-\frac{1}{a}} = 8^{1-\frac{1}{a}}$ |

Lösung A10

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|--------------------------------|---------------------------------|---------------------------------|---|
| a) $xy \cdot 6^{\frac{1}{a}}$ | b) $ab \cdot 42^{\frac{1}{c}}$ | c) $cd \cdot 12^{\frac{1}{x}}$ | d) $ef \cdot 20^{\frac{1}{k}}$ |
| e) $xy \cdot 24^{\frac{1}{l}}$ | f) $pq \cdot 60^{\frac{1}{a}}$ | g) $lm \cdot 210^{\frac{1}{b}}$ | h) $xy \cdot 6^{\frac{1}{a}} \cdot 4^{\frac{1}{b}}$ |
| i) $xy \cdot 6^{-\frac{1}{a}}$ | j) $ab \cdot 42^{-\frac{1}{c}}$ | k) $cd \cdot 12^{-\frac{1}{x}}$ | l) $ef \cdot 20^{-\frac{1}{k}}$ |
| m) $xy \cdot 8^{-\frac{1}{l}}$ | n) $pq \cdot 18^{-\frac{1}{c}}$ | o) $lm \cdot 30^{-\frac{1}{b}}$ | p) $xy \cdot 8^{-\frac{1}{a}}$ |

Lösung A11

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|-----------------------------------|-----------------------------------|-----------------------------------|--|
| a) $xy \cdot (cd)^{\frac{1}{a}}$ | b) $ab \cdot (xy)^{\frac{1}{c}}$ | c) $cd \cdot (pq)^{\frac{1}{x}}$ | d) $ef \cdot (yz)^{\frac{1}{k}}$ |
| e) $xy \cdot (abc)^{\frac{1}{l}}$ | f) $pq \cdot (xyz)^{\frac{1}{a}}$ | g) $lm \cdot (pq)^{\frac{1}{x}}$ | h) $xy \cdot (uw)^{\frac{1}{a}} \cdot v^{\frac{1}{b}}$ |
| i) $xy \cdot (cd)^{-\frac{1}{a}}$ | j) $ab \cdot (xy)^{-\frac{1}{c}}$ | k) $cd \cdot (pq)^{-\frac{1}{x}}$ | l) $ef \cdot (yz)^{-\frac{1}{k}}$ |
| m) $xy \cdot (ac)^{-\frac{1}{l}}$ | n) $pq \cdot (xy)^{-\frac{1}{a}}$ | o) $lm \cdot (pq)^{-\frac{1}{x}}$ | p) $xy \cdot (uv)^{-\frac{1}{k}}$ |