Herzlichen Glückwunsch! Sie haben bestanden!

ZUM BESTEHEN 75 % oder höher

Lernen Sie weiter

BEWERTUNG
100 %

Practice quiz on Exponents and Logarithms

GESAMTPUNKTZAHL 12

1. Re write the number $784 = 2 \times 2 \times 2 \times 2 \times 7 \times 7$ using exponents. **1 / 1 Punkten**

- ○ $(16^4)(49^2)$

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- ◉ $(2^4)(7^2)$

✓ **Richtig**
For this type of problem, count the number of times each relevant factor appears in the product. That number is the exponent for that factor.

2. What is $(x^2 - 5)^0$? **1 / 1 Punkten**

- ○ -4
- ◉ 1
- ○ (x^2)
- ○ $(x^2) - 5$

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Any real number (except zero) raised to the"zeroith" power $= 1$.

3. Simplify $((x-5)^2)^{-3}$ **1 / 1 Punkten**

- ◉ $(x-5)^{-6}$
- ○ $(x-5)^{-1}$
- ○ $(x-5)$
- ○ $(x-5)^{-5}$

✓ **Richtig**
By Rule 2, "Power to a Power," multiply the exponents and get:

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{align}

4. Simplify {\large \begin {align}({\frac{8^2}{8^7}})^2\end {align}} **1 / 1 Punkten**

- ○ 8^{-4}
- ◉ 8^{-10}
- ○ 8^{-5}
- ○ 8^{-1}

✓ **Richtig**
We can first simplify what is inside the parenthesis to 8^{-5} using the Division and Negative

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Then apply division and negative powers-- the result is the same. {\large \begin {align}\frac{8^4}{8^{14}}\end {align}= 8^{-10}}

5. $\log 35 = \log 7 + \log x$ **1 / 1 Punkten**

Solve for x

- ◉ 5
- ○ 7
- ○ 4
- ○ 28

✓ **Richtig**

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$\log(x)$ = \log \begin {align}(\frac {35}{7}\end {align})

By the Quotient Rule $\log x = \log 5$

6. $\log_2(x^2 + 5x + 7) = 0$ **1 / 1 Punkten**

Solve for x

- ○ $x = 2$ or $x = 3$
- ◉ $x = -2$ or $x = -3$
- ○ $x = 2$
- ○ $x = 3$

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Use both sides as exponent for 2.

$2^{\log_2 x^2+5x+7} = 2^0$

$x^2 + 5x + 7 = 1$

$x^2 + 5x + 6 = 0$

$(x+3)(x+2) = 0$

$x = -3$ OR

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7. Simplify $\log_2 72 - \log_2 9$ **1 / 1 Punkten**

- ○ $\log_2 4$
- ○ $\log_2 63$
- ○ 4
- ◉ 3

✓ **Richtig**
By the quotient rule, this is \log_2 \begin {align}{\frac{72}{9}}= \log_2 {2^3}= 3\end {align}

8. Simplify $\log_3 9 - \log_3 3 + \log_3 5$ **1 / 1 Punkten**

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- ○ 15
- ○ $\log_3 8$

✓ **Richtig**
By the Quotient and Product Rules, this is \log_3 \begin {align}{\frac{9 \times 5}{3}}\end {align}=\log_3 15

9. Simplify $\log_2(3^8 \times 5^7)$ **1 / 1 Punkten**

- ○ $(5 \times \log_2 3) + (8 \times \log_2 5)$
- ◉ $(8 \times \log_2 3) + (7 \times \log_2 5)$
- ○ $15 \times \log_2 56$

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✓ **Richtig**
We first apply the Product Rule to convert to the sum: $\log_2(3^8) + \log_2(5^7)$. Then apply the power and root rule.

10. If $\log_{10} y = 100$, what is $\log_2 y = ?$ **1 / 1 Punkten**

- ◉ 332.19
- ○ 500
- ○ 301.03
- ○ 20

✓ **Richtig**
Use the change of base formula, \log_a b=\begin {align}\frac{\log_x b}{\log_x a}\end {align}

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So \begin {align}\frac {100}{\log_{10}{2}} = \frac {100}{0.30103} =332.19\end {align}

11. A tree is growing taller at a continuous rate. In the past 12 years it has grown from 3 meters to 15 meters. What is its rate of growth per year? **1 / 1 Punkten**

- ○ 11.41%
- ○ 12.41%
- ○ 10.41%
- ◉ 13.41%

✓ **Richtig**
{\large \begin {align}\frac{\ln{\frac{15}{3}}}{12}=0.1341\end {align}}

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12. Bacteria can reproduce exponentially if not constrained. Assume a colony grows at a continually compounded rate of 400% per day. How many days before a colony with initial mass of 6.25 X 10^{-10} grams weights 1000 Kilograms? **1 / 1 Punkten**

- ○ 87.5 days
- ○ 0.875 days
- ○ 875 days
- ◉ 8.75 days

✓ **Richtig**
$6.25 \times 10^{-10} \times e^{4t} = 10^6$

{\large 4t = \ln\begin {align}{(\frac{10^6}{(6.25 \times {10^{-10}})})}=35.00878\end {align}}