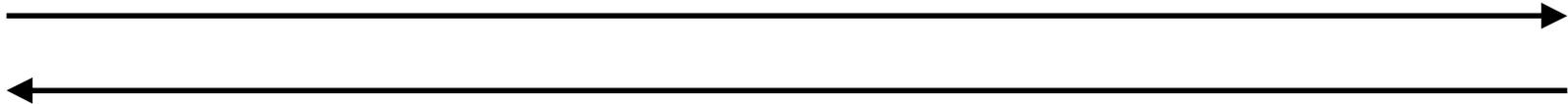


# Multiplikation «gleiche Basis»

$$a^m \cdot a^n = a^{m+n}$$

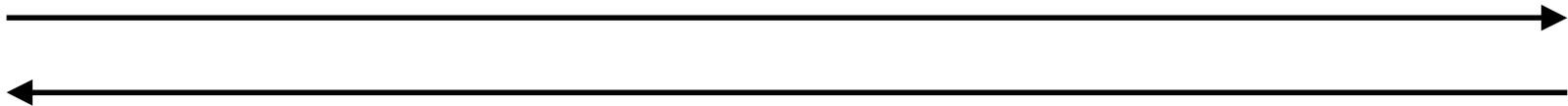
$$\bigcirc^{\square} \cdot \bigcirc^{\triangle} = \bigcirc^{\square + \triangle}$$



# Multiplikation «gleiche Hochzahl»

$$a^n \cdot b^n = (a \cdot b)^n$$

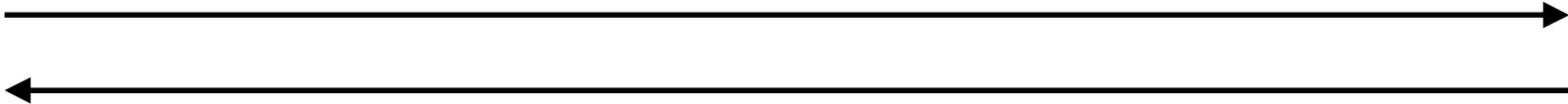
$$\bigcirc^\triangle \cdot \square^\triangle = (\bigcirc \cdot \square)^\triangle$$



# Division «gleiche Basis»

$$\frac{a^m}{a^n} = a^{m-n}$$

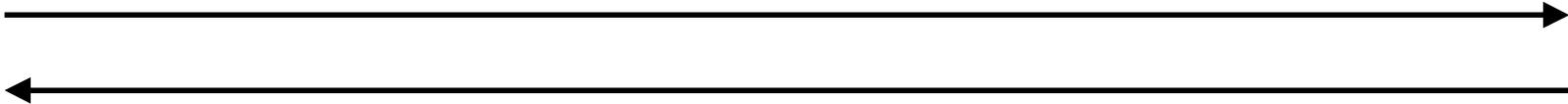
$$\frac{O^{\square}}{O^{\triangle}} = O^{\square-\triangle}$$



# Division «gleiche Hochzahl»

$$\frac{a^n}{b^n} = \left( \frac{a}{b} \right)^n$$

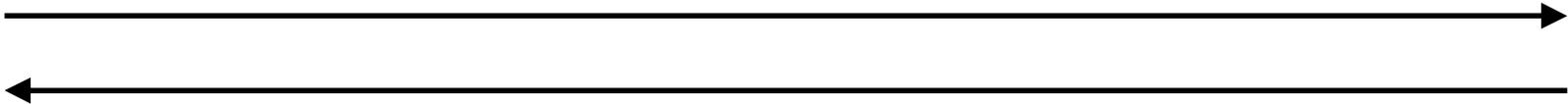
$$\frac{\bigcirc^\triangle}{\square^\triangle} = \left( \frac{\bigcirc}{\square} \right)^\triangle$$



# Potenzieren von Potenzen

$$\left(a^m\right)^n = a^{m \cdot n}$$

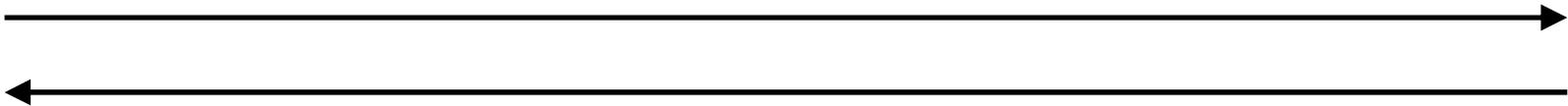
$$\left(0^{\square}\right)^{\triangle} = 0^{\square \cdot \triangle}$$



# Definition

$$\sqrt[n]{a} = x \iff x^n = a$$

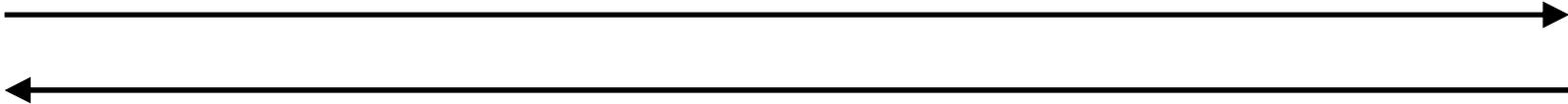
$$\sqrt{9} = 3 \iff 3^2 = 9$$



# Radizieren

$$\sqrt[n]{a^m} = a^{\frac{m}{n}}$$

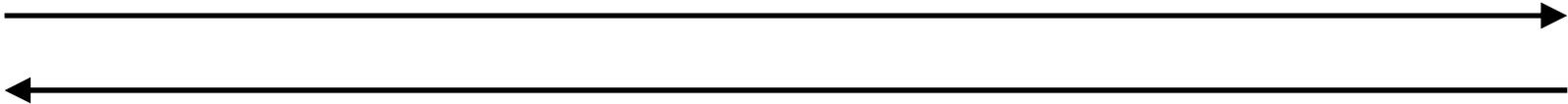
$$\sqrt{\bigcirc^{\square}} = \bigcirc^{\triangle}$$



# Definition

$$\log_a b = x \iff a^x = b$$

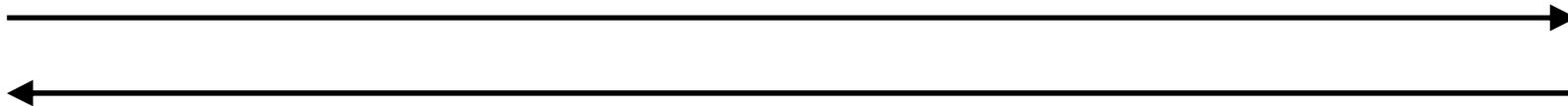
$$\log_3 9 = 2 \iff 3^2 = 9$$



# Logarithmus eines Produktes

$$\log_a (b \cdot c) = \log_a b + \log_a c$$

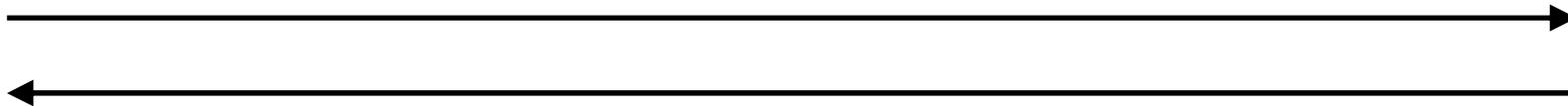
Ein Produkt wird logarithmiert,  
indem man die Logarithmen der Faktoren addiert.



# Logarithmus eines Quotienten

$$\log_a \left( \frac{b}{c} \right) = \log_a b - \log_a c$$

Ein Bruch wird logarithmiert,  
indem man vom Logarithmus des Zählers den Logarithmus des Nenners subtrahiert.



# Logarithmus einer Potenz

$$\log_a b^n = n \cdot \log_a b$$

Eine Potenz wird logarithmiert,  
indem man den Logarithmus der Basis mit dem Exponenten multipliziert.

