

$$c) \frac{25^{801}}{5^{1599}} = \frac{(5^2)^{801}}{5^{1599}} = \frac{5^{2 \cdot 801}}{5^{1599}} = \frac{5^{1602}}{5^{1599}} = 5^{1602-1599} = 5^3 = 125$$

TAI: $\frac{25^{801}}{5^{1599}} = \frac{\overbrace{25 \cdot 25 \cdot 25 \cdot \dots \cdot 25}^{801}}{\underbrace{5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot \dots \cdot 5}_{1599}} = \frac{25 \cdot 25}{5} = \frac{5 \cdot 25}{1} = 125$

$$d) \frac{18^{1003} \cdot 4^{502}}{6^{2005}} = \frac{(2 \cdot 3^2)^{1003} \cdot (2^2)^{502}}{(2 \cdot 3)^{2005}} = \frac{2^{1003} \cdot (3^2)^{1003} \cdot 2^{1004}}{2^{2005} \cdot 3^{2005}}$$

$$= \frac{2^{1003} \cdot 3^{2006} \cdot 2^{1004}}{2^{2005} \cdot 3^{2005}} = 2^{1003+1004-2005} \cdot 3^{2006-2005} = 2^2 \cdot 3^1 = 4 \cdot 3 = 12$$

$$e) \frac{x^m \cdot x^m}{x^m + x^m} = \frac{x^{m+m}}{2x^m} = \frac{x^{2m}}{2x^m} = \frac{1}{2} \cdot \frac{x^{2m}}{x^m} = \frac{1}{2} x^{2m-m} = \frac{1}{2} x^m$$

TAI: $x^m \cdot x^m = (x \cdot x)^m = (x^2)^m = x^{2m}$

7, Exponentiere 0 bis -m

$$a^2 = \frac{a}{\frac{1}{a}}$$

$$a^1 = \frac{a^2}{a}$$

$$a^0 = \frac{a}{a} = 1, a \neq 0$$

$$a^{-1} = \frac{a^0}{a} = \frac{1}{a}$$

$$a^{-2} = \frac{a^{-1}}{a} = \frac{\frac{1}{a}}{a} = \frac{1}{a} \cdot \frac{1}{a} = \left(\frac{1}{a}\right)^2 = \frac{1}{a^2}$$

TAI: $\frac{\frac{a}{b}}{c} = \frac{a}{b} \cdot \frac{1}{c} = \frac{a}{bc}$ (erf.)

$\frac{a}{\frac{b}{c}} = a \cdot \frac{c}{b} = \frac{ac}{b}$ (erf.)

Gleichst:

$$\boxed{a^0 = 1}$$

$$\boxed{a^{-m} = \frac{1}{a^m} = \left(\frac{1}{a}\right)^m} \quad a \neq 0$$