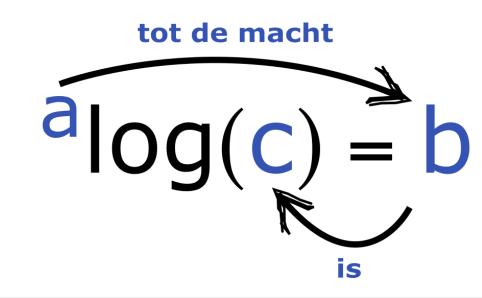
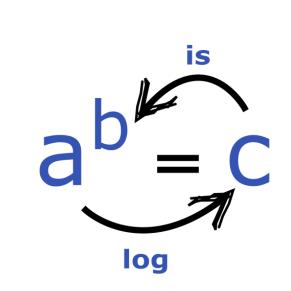
#### Breuken

Rekenregel	Voorbeeld
$\frac{ca}{cb} = \frac{a}{b}$	$\frac{2\cdot 3}{2\cdot 4} = \frac{3}{4}$
$\frac{a/c}{b/c} = \frac{a}{b}$	$\frac{3/2}{4/2} = \frac{3}{4}$
$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$	$\frac{1}{2} \cdot \frac{3}{4} = \frac{1 \cdot 3}{2 \cdot 4} = \frac{3}{8}$
$a \div rac{b}{c} = a \cdot rac{c}{b} = rac{ac}{b}$	$2 \div \frac{3}{4} = 2 \cdot \frac{4}{3} = \frac{2 \cdot 4}{3} = \frac{8}{3}$
$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c}$	$\frac{1}{2} \div \frac{3}{4} = \frac{1}{2} \cdot \frac{4}{3} = \frac{4}{6}$
$\frac{a}{b} + \frac{c}{b} = \frac{a+c}{b}$	$\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$
$\frac{a}{b} + \frac{c}{d} = \frac{ad}{bd} + \frac{bc}{bd} = \frac{ad+bc}{bd}$	$\frac{1}{2} + \frac{3}{4} = \frac{1 \cdot 4}{2 \cdot 4} + \frac{2 \cdot 3}{2 \cdot 4} = \frac{4+6}{8} = \frac{12}{8}$

### Exponenten en logaritmen

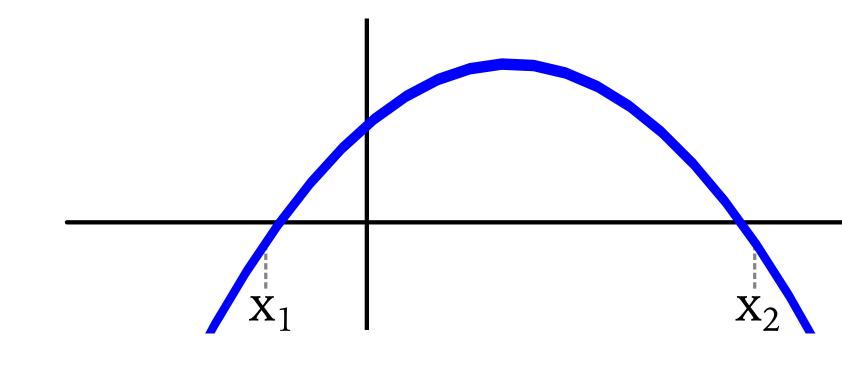




Rekenregel	Voorbeeld
$a^n \cdot a^m = a^{n+m}$	$2^2 \cdot 2^3 = 2^{2+3} = 2^5$
$a^n \div a^m = a^{n-m}$ als $a  eq 0$	$2^5 \div 2^2 = 2^{5-2} = 2^3$
$(a^n)^m=a^{nm}$	$(2^2)^2 = 2^4$
$(a^n \cdot b^m)^q = a^{nq} \cdot b^{mq}$	$(2^3\cdot 3^4)^2=2^6\cdot 3^8$
$a^{-n}=1/a^n$	$4^{-2}=1/4^2$
$a^0=1$	$2^0=1$

Rekenregel	Voorbeeld	
$^b \log b^a = a$	$^{10}\log 1000 = ^{10}\log 10^3 = 3$	
$\log a + \log b = \log ab$	$\log 100 + \log 10 = \log 1000$	
$\log a - \log b = \log a/b$	$\log 8 - \log 2 = \log 8/2 = \log 4$	
$a \cdot \log b = \log b^a$	$7 \cdot \log 5 = \log 5^7$	
$a \log a = 1$	$^2 \log 2 = 1$	
$^{a}\log c=b  \Rightarrow  a^{b}=c$	$^2 \log 8 = 3  \Rightarrow  2^3 = 8$	

## ABC-formule



$$x_{1,2}=rac{-b\pm\sqrt{b^2-4ac}}{2a}$$

# Afgeleide van functies

Functie	Afgeleide	f(x)	f'(x)
$\boldsymbol{a}$	0	6	0
ax	$\boldsymbol{a}$	7x	7
$oldsymbol{a}oldsymbol{x}^b$	$b \cdot ax^{b-1}$	$8x^3$	$24x^2$
$c \cdot f(x)$	$c \cdot f'(x)$	$2x^{13}$	$2\cdot 13x^{12}=26x^{12}$
f(x)+g(x)	f'(x)+g'(x)	$x^4+4x$	$4x^3+4$
$e^x$	$e^x$	$e^x$	$e^x$
$ae^{bx}$	$b \cdot ae^{bx}$	$rac{1}{2} \cdot \pi \sqrt{2} \cdot e^{2x}$	$\pi\sqrt{2}\cdot e^{2x}$
$e^{f(x)}$	$f'(x) \cdot e^{f(x)}$	$e^{2x^2-x}$	$(4x-1)\cdot e^{2x^2-x}$
$a^{f(x)}$	$\ln(a) \cdot f'(x) \cdot a^{f(x)}$	$5^{4x-1}$	$\ln(5) \cdot 4 \cdot 5^{4x-1}$
$\ln(x)$	$\frac{1}{x}$	$\ln(x)$	$\frac{1}{x}$
$\ln(ax) = \ln(a) + \ln(x)$	$\frac{1}{x}$	$\ln(4x) = \ln(4) + \ln(x)$	$\frac{1}{x}$
$f(x)\cdot g(x)$	$f'(x)\cdot g(x)+f(x)\cdot g'(x)$	$(x^2-4)(x^3+2x+3)$	$5x^4 - 6x^2 + 6x - 8$
$\frac{f(x)}{g(x)}$	$\frac{g(x){\cdot}f'(x){-}f(x){\cdot}g'(x)}{(g(x))^2}$	$\frac{4x+1}{x^2+1}$	$\frac{-4x^2-2x+4}{(x^2+1)^2}$

#### Grafieken van functies

