$$\log_{\frac{1}{3}}(1+x) = -1$$

Podmínky:

$1+x > 0$

$x > -1$

$\log_{\frac{1}{3}}(1+x) = \log_{\frac{1}{3}}\left(\frac{1}{3}\right)^{-1}$

$1+x = \left(\frac{1}{3}\right)^{-1}$

$1+x = 3$

$x = 2 \rightsquigarrow \boxed{K = \{2\}}$

$$\log_2\left(x^2+x\right) = \log_2(-2x)$$

Podmínky

$-2x > 0 \quad /:(-2)$

I. $x < 0$

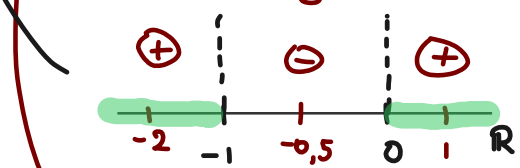
$x^2 + x > 0$

$x(x+1) > 0$

$x = 0$ $\quad$ $x+1 = 0$

$x = -1$

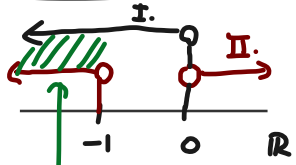
kořeny



$-2\cdot(-2+1) = -2\cdot(-1) = 2 > 0$

II. $x \in (-\infty, -1) \cup (0, \infty)$

Final one:



$x \in (-\infty, -1)$

$$\log_2(x^2+x) = \log_2(-2x)$$

$x^2+x = -2x$

$x^2+x+2x = 0$

$x^2+3x = 0$

$x(x+3) = 0$

$x=0$ X $\quad x+3=0$

$x=-3$

$K=\{-3\}$

$$2\log x = \log(x+6)$$

Podmínka:

$x>-6$

$\log x^2 = \log(x+6)$

$x^2 = x+6$

$x^2-x-6 = 0$

$a=1$
$b=-1$
$c=-6$

$D = (-1)^2 - 4\cdot 1\cdot(-6)$

$D = 1+24$

$D = 25$

$x_{1,2} = \frac{1\pm 5}{2} = \begin{cases} 3 \\ -2 \end{cases}$ (+ / −)

$K=\{-2,3\}$

$$\log x^6 - 3\log x = 3 - \log 27$$

$6\log x - 3\log x = \log 10^3 - \log 27$

$3\log x = \log \frac{10^3}{27}$

$3\log x = \log \frac{1000}{27}$

$\log x^3 = \log \frac{1000}{27}$

$x^3 = \frac{1000}{27}$

$x = \frac{10}{3}$

Conditions:

I. $x^6 > 0$

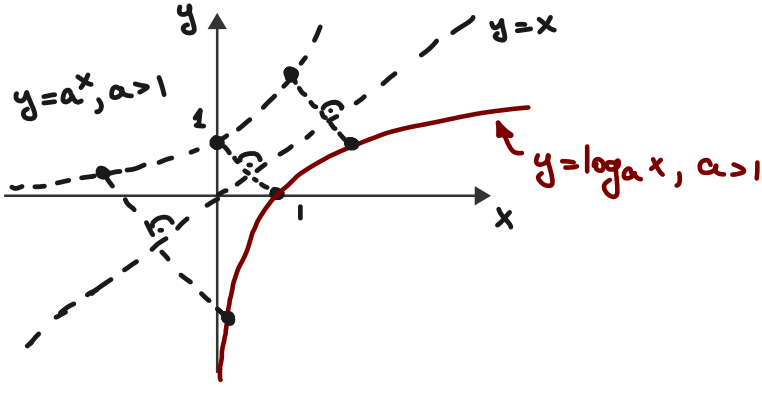
$x \neq 0$

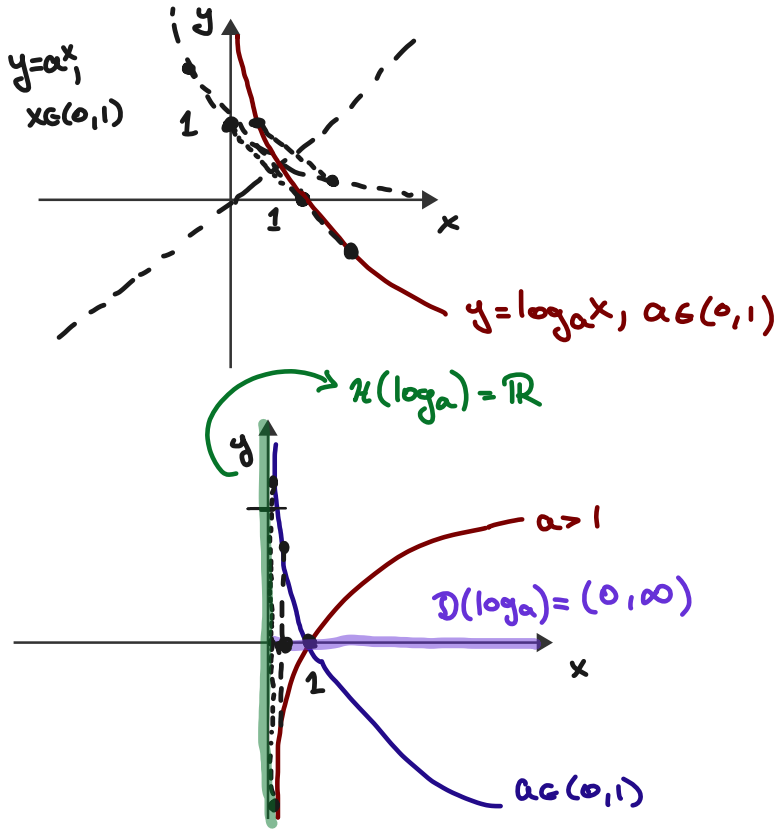
II. $x > 0$

$x > 0$

$K = \left\{\frac{10}{3}\right\}$

Graphs of logarithms




y=a^x,
x∈(0,1)
y
1
1
x
y=log_a x, a∈(0,1)
H(log_a) = ℝ
y
a>1
D(log_a) = (0,∞)
x
1
a∈(0,1)