Klas 6 Huiswerk

① a $^{5}\log 625 = {}^{5}\log 5^4 = 4 \cdot {}^{5}\log 5 = 4 \cdot 1 = 4$

b) $^{9}\log \frac{1}{3} = {}^{9}\log (3)^{-1} = {}^{9}\log \left(9^{\frac{1}{2}}\right)^{-1} = {}^{9}\log 9^{-\frac{1}{2}} = -\frac{1}{2}\,{}^{9}\log 9 = -\frac{1}{2}$

c) $^{-2}\log 4 =$ kan niet $a > 0$ en $a = -2$

d) $^{4}\log 8\sqrt{2} = {}^{4}\log 2^3 \cdot 2^{\frac{1}{2}} = {}^{4}\log 2^{3\frac{1}{2}} = {}^{4}\log \left(4^{\frac{1}{2}}\right)^{3\frac{1}{2}} = {}^{4}\log 4^{\frac{7}{4}} =$

e) $^{10}\log(-0{,}01) = {}^{10}\log$ negatief getal, kan dus niet

f) $^{3\sqrt{2}}\log 128 = {}^{3\sqrt{2}}\log 2^7 = {}^{3\sqrt{2}}\log 2^{\frac{21}{3}} = {}^{3\sqrt{2}}\log \sqrt[3]{2^{21}} =$

$^{3\sqrt{2}}\log\left(\sqrt[3]{2}\right)^{21} = 21 \cdot {}^{3\sqrt{2}}\log \sqrt[3]{2} = 21 \cdot 1 = 21.$

g) $^{\frac{1}{6}}\log\left(36 \cdot \sqrt[5]{216}\right) = {}^{\frac{1}{6}}\log 6^2 \cdot 6^{\frac{3}{5}} = {}^{\frac{1}{6}}\log 6^{\frac{13}{5}} =$

$= {}^{\frac{1}{6}}\log\left(6^{-1}\right)^{-\frac{13}{5}} = {}^{\frac{1}{6}}\log\left(\frac{1}{6}\right)^{-\frac{13}{5}} = -\frac{13}{5} \cdot {}^{\frac{1}{6}}\log \frac{1}{6} = -\frac{13}{5}$

h) slaan we over

i) $^{3}\log\left({}^{3}\log \sqrt[3]{3}\right) = {}^{3}\log\left({}^{3}\log 3^{\frac{1}{3}}\right) = {}^{3}\log \frac{1}{3} = {}^{3}\log 3^{-1} = -1.$

② met rekenmachine mag het wel

③ a) $^{a}\log 36 = 2 \longrightarrow a^2 = 36 \longrightarrow a = 6$ (en niet -6 want $a > 0$).

b) $^{a}\log 250 - {}^{a}\log 25 = 1 \longrightarrow {}^{a}\log \frac{250}{25} = 1$

dan $^{a}\log 10 = 1 \longrightarrow$ als $a^1 = 10 \leftrightarrow a = 10$

c) $^{a}\log 64 = 3 \cdot {}^{4}\log 16$

$^{a}\log 64 = 3 \cdot {}^{4}\log 4^2 = 3 \cdot 2 \cdot 1 = 6$

$a^6 = 64 \Leftrightarrow a = 2$

d) $2 + {}^{a}\log \sqrt[4]{3} = {}^{a}\log 3\sqrt[4]{243}$

$2 + \frac{1}{4} \cdot {}^{a}\log 3 = {}^{a}\log 3 + {}^{a}\log \sqrt[4]{243}$

$2 + \frac{1}{4} \cdot {}^{a}\log 3 = 1 \cdot {}^{a}\log 3 + \frac{5}{4}\,{}^{a}\log 3$

$2 = 2 \cdot {}^{a}\log 3$

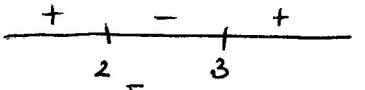
$1 = {}^{a}\log 3$

$a = 3$

opg 6 a $f(x) = \log(x^2 - 5x + 6)$

$x^2 - 5x + 6 > 0$

$(x-2)(x-3) > 0$

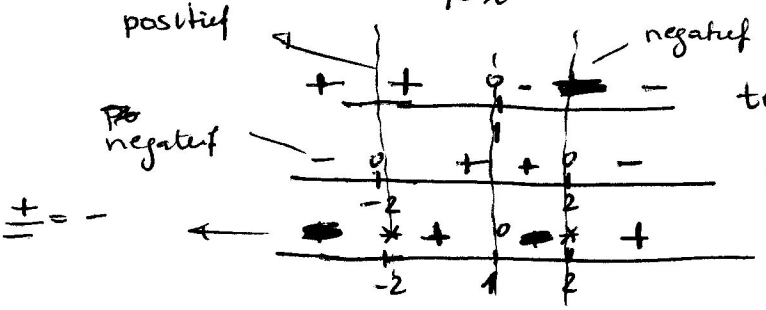


dal

domein dus $]-\infty, 2[\cup [3, \infty[$

b) $f(x) = {}^{2}\log \frac{1-x}{4-x^2}$

$\frac{1-x}{4-x^2} > 0$ breuk. teller = $1-x$ rechte lijn
noemer = $4-x^2$ parabool.



domein dus $]-2, 1[\cup]2, \infty[$.

Vraag uitleg in de les!

⑥ c $\frac{1}{3}\log(81 - 3^{-x})$

$81 - 3^{-x} > 0$

$81 > 3^{-x}$

$3^4 > 3^{-x} \rightarrow 3^{-x} < 3^4$

$-x < 4$ want 3^x is een stijgende functie

$x > -4$

domein $]-4, \infty>$. op half rond, half dicht.

⑥ d $\log \sqrt{2-x} = \log (2-x)^{\frac{1}{2}} = \frac{1}{2}\log 2 - x$

$2 - x > 0$

$x < 2$

⑦ $f(x) = 3 - 3^x$

dus $y = 3 - 3^x \longrightarrow x = 3 - 3^y \Leftrightarrow$

⑦ a

$x - 3 = -3^y \Leftrightarrow$

$-x + 3 = 3^y$

$y = {}^{3}\log(3-x)$

⑥ b

$y = {}^{5}\log(5-x)$

dus $x = {}^{5}\log(5-y)$

$\Leftrightarrow {}^{5}\log(5-y) = x$

$5^x = 5 - y$

$-5^x + 5 = y$