Hoofdstuk 6 – Logaritmen

Opdracht 1

a. $4 \times 32 = 2^2 \times 2^5 = 2^7 = 128$

b. $2048 : 64 = 2^{11} : 2^6 = 2^5 = 32$

c. $\sqrt{256} = \sqrt{2^8} = 2^4 = 16$

Opdracht 2

a. ${}^2\log(x) = -2 \Rightarrow x = 2^{-2} = \frac{1}{2^2} = \frac{1}{4}$

b. ${}^x\log(256) = 4 \Rightarrow x^4 = 256 \Rightarrow x = \sqrt[4]{256} = 4$

c. ${}^5\log\left(\frac{1}{125}\right) = x \Rightarrow 5^x = \frac{1}{125} \Rightarrow 5^x = \frac{1}{5^3} \Rightarrow 5^x = 5^{-3} \Rightarrow x = -3$

Opdracht 3

a. $\log(1087) \approx 3{,}0362$

b. $\log(10{,}23) \approx 1{,}0099$

c. $\log(n) \approx 3{,}0913 \rightarrow 1234$

d. $\log(x) = 2{,}0913 \rightarrow 123{,}4$

Opdracht 4

a. 14 : 12

1,1461 – 1,0792 = 0,0669

0,0669 → 1,1665

b. √147

147 → 2,1673 → delen door 2 geeft 1,0837

1,0837 → 12,125

Opdracht 5

L2.

Te bewijzen: ${}^a\log b = \frac{\log b}{\log a}$

$a^{{}^a\log(b)} = b$

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

${}^a\log(b) \cdot \log(a) = \log(b)$

${}^a\log(b) = \frac{\log(b)}{\log(a)}$

L3.

Te bewijzen: ${}^a\log(b^p) = p \cdot {}^a\log(b)$

L4.

Te bewijzen: $a^{{}^a\log(b)} = b$

Gebruik L1: ${}^a\log(b) = c \Leftrightarrow a^c = b$

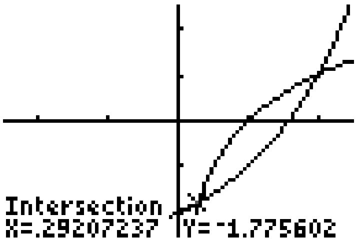
${}^a\log(b) = {}^a\log(b)$

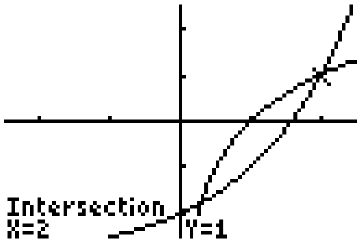
Opdracht 6

a. ${}^3\log(243) = {}^3\log(3^5) = 5$

b. ${}^{\frac{1}{2}}\log(32) = {}^{\frac{1}{2}}\log(2^5) = {}^{\frac{1}{2}}\log(\frac{1}{2^{-5}}) = {}^{\frac{1}{2}}\log\left(\frac{1}{2}\right)^{-5} = -5$

Opdracht 7

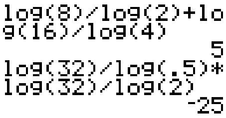




Opdracht 8

a. ${}^{2}\log(8)+{}^{4}\log(16)=3+2=5$

b. ${}^{0,5}\log(32)\cdot{}^{2}\log(32)=-5\cdot 5=-25$



Opdracht 9

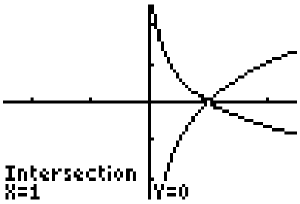
a. ${}^{2}\log(6)\approx 2{,}585$

b. ${}^{3}\log(6)\approx 1{,}631$

c. $\log(6)\approx 0{,}778$

Opdracht 10

a.



b.

${}^{g}\log(x)=0$

$x=1$

$(1,0)$

c.

Ja.

$\lim_{x\downarrow 0}{}^{g}\log(x)=-\infty$