Facitliste – opgaver 4

Opg. 401

  a.

x	1	0,5	0,1	3	9	10	100	137	6,7
Log(x)	0	$-0,3$	-1	$0,48$	$0,95$	1	2	$2,14$	$0,83$

Opg. 402

  a.

x	1	0,5	0,1	3	9	10	100	137	6,7
ln(x)	0	$-0,69$	$-2,3$	$1,1$	$2,2$	$2,3$	$4,61$	$4,92$	$1,9$

Opg. 403

  a.

x	1	e^1	e^5	e^{-3}	e^2	e^{100}	$\dfrac{1}{e^5}$
$\ln(x)$	0	1	5	-3	2	100	-5

Opg. 404

  a.

x	10^3	1000	10^{-3}	0,001	0,1	10	1	10000	1000000000
Log(x)	3	3	-3	-3	-1	1	0	4	9

Opg. 405

    a. $\log(1) = 0$

    b. $\ln(1) = 0$

    c. $\log(4) = 0,60$

    d. $\log(1,38) = 0,14$

    e. $\log(10) = 1$

    f. $\ln(15) = 2,71$
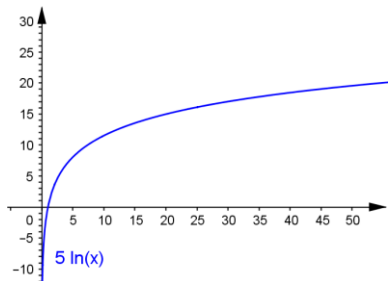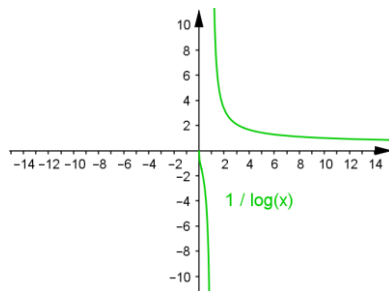
    g. $\log(8,91) = 0,95$

Opg. 406

    a.
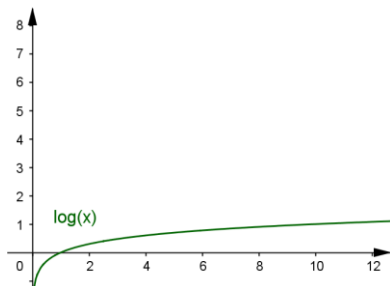
    b.
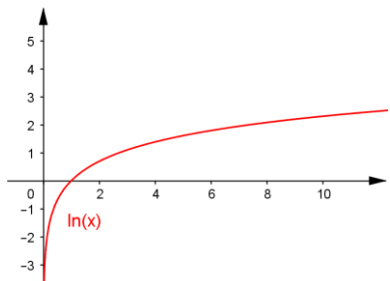
    c.

d.

Opg. 407

a. (1 ; 2) , (1 ; 800) , (2 ; 0,02) , (2 ; 30) , (3 ; 0,04) , (3 ; 5) , (4 ; 0,2) , (4 ; 20) , (5 ; 0,1) , (5 ; 300)

Opg. 408

a. $f(-10) = 0,5$
b. $f(0) = 3$
c. $f(5) = 7$
d. $f(10) = 19$

Opg. 409

a. (0,2 ; 2) , (0,3 ; 0,2) , (0,5 ; 80) , (1 ; 2) , (2 ; 90) , (8 ; 20) , (10 ; 0,7) , (20 ; 0,7) , (60 ; 60) , (70 ; 0,5)

Opg. 410

a. $f(1) = 100$
b. $f(2) = 180$
c. $f(0,1) = 20$
d. $f(10) = 500$

Opg. 411

a. $\log(15)$
b. $\ln(5)$
c. $\log(100) = 2$
d. $\ln(2^3) = \ln(8)$

Opg. 412

a. $x = \dfrac{\ln(10)}{\ln(2)}$

b. $x = \dfrac{\ln(11)}{\ln(15)}$

c. $x = \dfrac{\ln(7)}{\ln(5)}$

d. $x = \dfrac{\ln(8)}{\ln(10)}$

e. $n = \dfrac{\ln(8)}{\ln(1,04)}$

Opg. 413

a.

$$b \cdot a^{x+T_2} = 2 \cdot b \cdot a^x$$

$$\frac{b \cdot a^{x+T_2}}{b} = \frac{2 \cdot b \cdot a^x}{b}$$

$$a^{x+T_2} = 2 \cdot a^x$$

$$a^x \cdot a^{T_2} = 2 \cdot a^x$$

$$\frac{a^x \cdot a^{T_2}}{a^x} = \frac{2 \cdot a^x}{a^x}$$

b.

$$a^{T_2} = 2$$

$$\log(a^{T_2}) = \log(2)$$

$$T_2 \cdot \log(a) = \log(2)$$

$$\frac{T_2 \cdot \log(a)}{\log(a)} = \frac{\log(2)}{\log(a)}$$

$$T_2 = \frac{\log(2)}{\log(a)}$$

Opg. 414

    a.

$$b \cdot a^{x+T_{\frac{1}{2}}} = \frac{1}{2} \cdot b \cdot a^x$$

$$\frac{b \cdot a^{x+T_{\frac{1}{2}}}}{\textcolor{red}{b}} = \frac{\frac{1}{2} \cdot b \cdot a^x}{\textcolor{red}{b}}$$

$$a^{x+T_{\frac{1}{2}}} = \frac{1}{2} \cdot a^x$$

$$a^x \cdot a^{x+T_{\frac{1}{2}}} = \frac{1}{2} \cdot a^x$$

$$\frac{a^x \cdot a^{x+T_{\frac{1}{2}}}}{\textcolor{red}{a^x}} = \frac{\frac{1}{2} \cdot a^x}{\textcolor{red}{a^x}}$$

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

$$\textcolor{red}{\log}\left(a^{x+T_{\frac{1}{2}}} \right) = \textcolor{red}{\log}(\frac{1}{2})$$

$$T_{\frac{1}{2}} \cdot \log(a) = \log(\frac{1}{2})$$

$$\frac{T_{\frac{1}{2}} \cdot \log(a)}{\textcolor{red}{\log(a)}} = \frac{\log(\frac{1}{2})}{\textcolor{red}{\log(a)}}$$

$$T_{\frac{1}{2}} = \frac{\log(\frac{1}{2})}{\log(a)}$$

Opg. 415

    a. $f(0) = 7000$
    b. $f(4) = 400$
    c. $f(8) = 25$
    d. $f(10) = 7$

Opg. 416

    a. $f(0,2) = 20$
    b. $f(10) = 3$
    c. $f(80) = 1$
    d. $f(500) = 0,4$