Facitliste – opgaver 2

Opg. 201

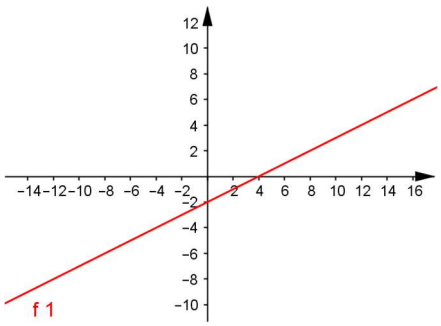
a. $f(0)=10$, $f(2)=0$, $f(-2)=20$ og $f(5)=-15$

b. Løsningen til $f(x)=0$ er $x=2$

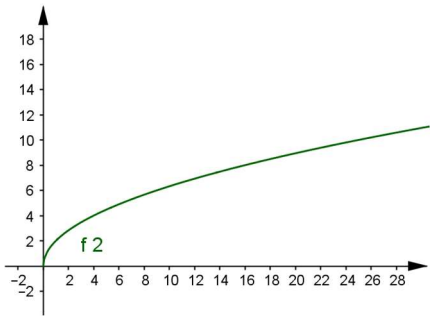
Løsningen til $f(x)=20$ er $x=-2$

Opg. 202

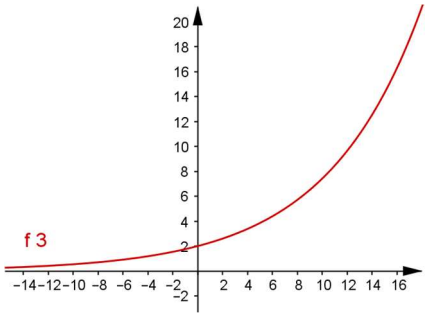
a. 202a



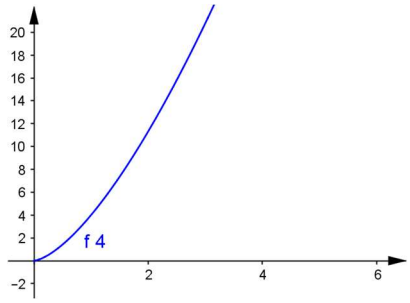
b. 202b



c. 202c

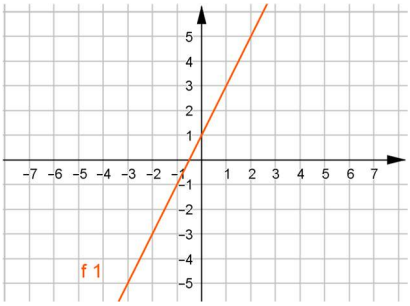


d. 202d

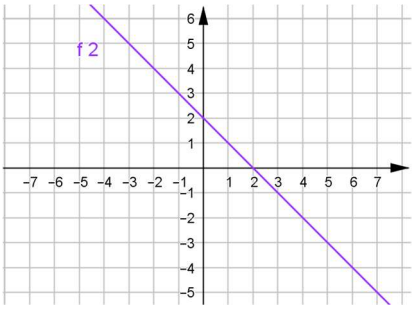


Opg. 203

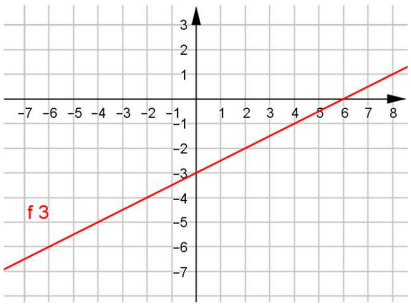
a. 203a



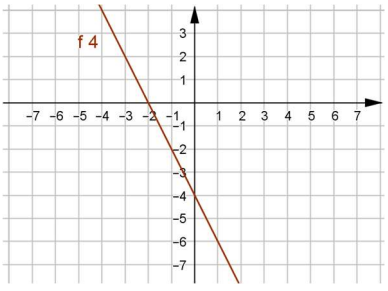
b. 203b



c. 203c

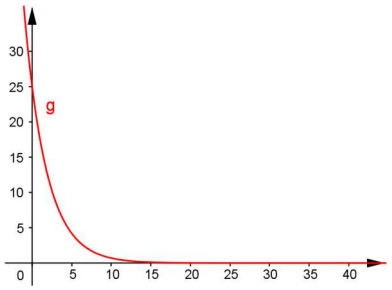


d. 203d



Opg. 204

a. 204a



b. $g(0)=25$, $g(10)=0,71$ og $g(-10)=885$.

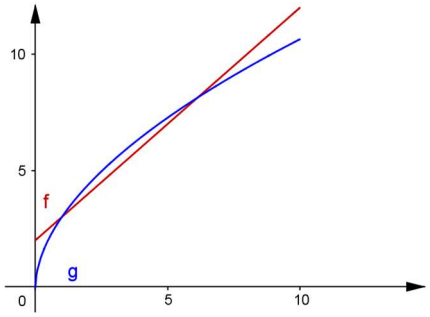
c. Løsningen til $g(x)=20$ er $x=0,63$

Løsningen til $g(x)=10$ er $x=2,57$

Opg. 205

a. $x=1$ eller $x=6,14$

b. 205b



c. (1 ; 3) og (6,14 ; 8,14)

Opg. 206

a. $Dm(f_1)=\mathbb{R}$

b. $Dm(f_2)=\mathbb{R}$

c. $Dm(f_3)=\mathbb{R}\setminus\{0\}$

d. $Dm(f_4)=\mathbb{R}\setminus\{5\}$

Opg. 207

a. 350 kWh

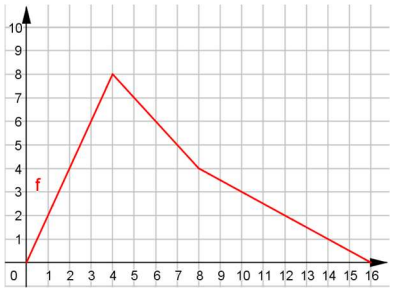
b. 65,47 cm

Opg. 208

a. 2,8 gram
b. 818,04 gram
c. 5464,82 gram
d. 23681,8 gram (For en elefant på 6 ton)

Opg. 209

a. 209a

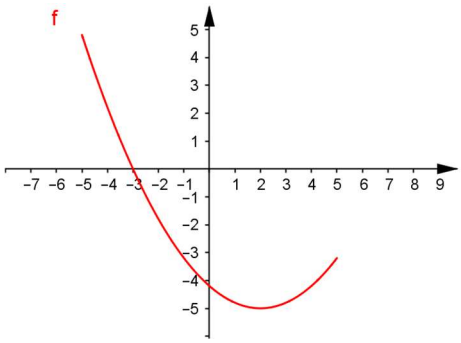


Opg. 210

a. $f(x)=\begin{cases}3x & ,0\le x\le 2\\ -x & ,2<x\le 8\end{cases}$

Opg. 211

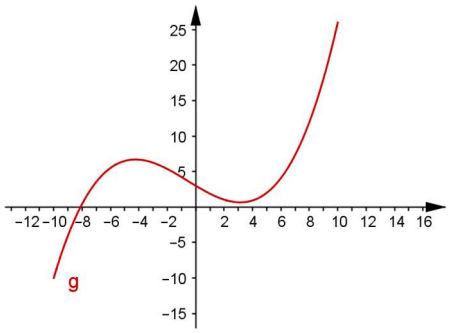
a. 211a



b. f er aftagende i intervallet [-5 ; 2]
f er voksende i intervallet [2 ; 5]

Opg. 212

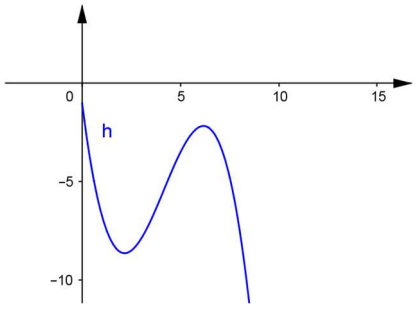
a. 212a



b. g er voksende i intervallerne [-10 ; -4,25] og [3,14 ; 10]
g er aftagende i intervallet [-4,25 ; 3,14]

Opg. 213

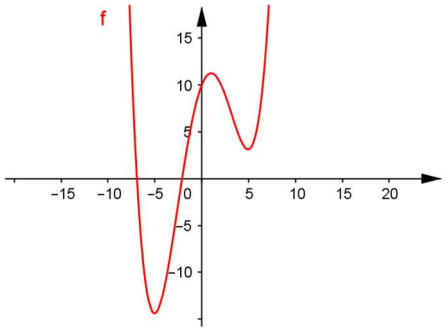
a. 213a



b. h er aftagende i intervallerne [0 ; 2,16] og [6,17 ; 10]
h er voksende i intervallet [2,16 ; 6,17]

Opg. 214

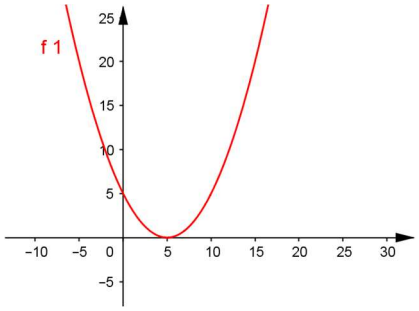
a. 214a



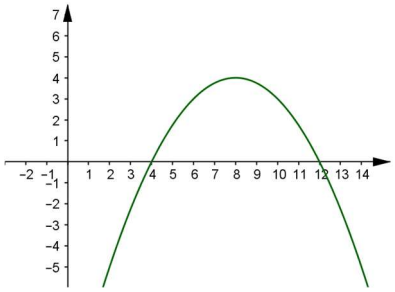
b. f er aftagende i intervallerne [-10 ; -5,04] og [1 ; 4,94]
f er voksende i intervallerne [-5,04 ; 1] og [4,94 ; 10]

Opg. 215

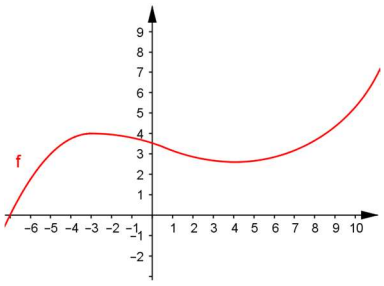
a. 215a



b. 215b



c. 215c



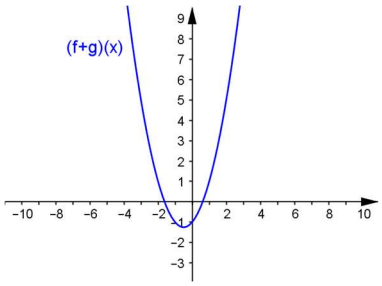
Opg. 216

a. -3
b. 3
c. -15
d. 6
e. -5
f. -28
g. 14
h. -18
i. 1
j. -2
k. 15
l. 21

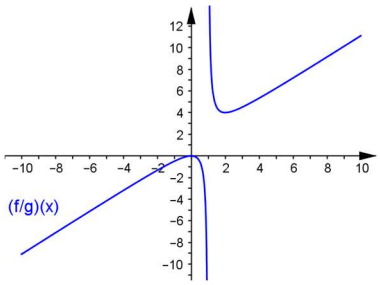
Opg. 217

a. 5
b. -7

c. 217c

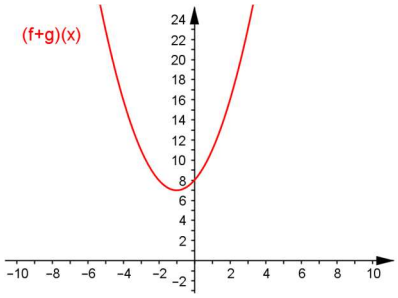


d. 217d

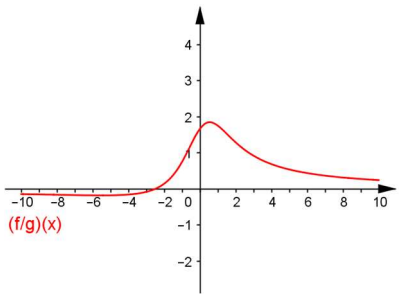


Opg. 218

a. 16
b. 1
c. 218c



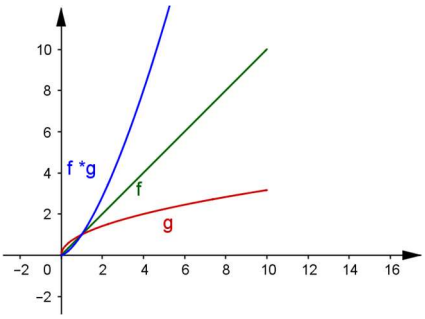
d. 218d



Opg. 219

a. 8

b. 219b

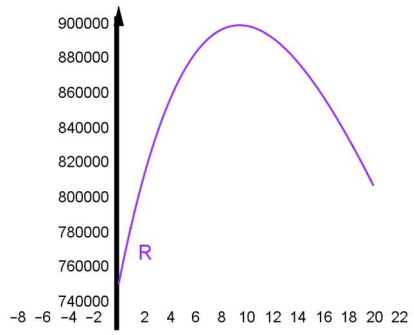


Opg. 220

a. $S(x) = 100x + 1000$

b. For x=0 er omsætningen på 750.000 kr.
For x=5 er omsætningen på 870.504 kr.

c. 220c



d. $x = 9,5$

Opg. 221

a. $f(g(1)) = 9$, $f(g(0)) = 25$ og $f(g(-2)) = 81$

b. $g(f(1)) = -3$, $g(f(-3)) = 13$ og $g(f(5)) = 45$

c. $f(g(x)) = (2x-5)^2$

d. $g(f(x)) = 2x^2 - 5$

Opg. 222

a. $f(g(1)) = 1$ og $f(g(-2)) = \frac{1}{4}$

b. $g(f(2)) = \frac{1}{4}$ og $g(f(-3)) = \frac{1}{9}$

c. $f(g(x)) = \frac{1}{x^2}$

d. $g(f(x)) = \frac{1}{x^2}$

Opg. 223

a. $f \circ g(1) = 2$, $f \circ g(0) = 1$ og $f \circ g(5) = 4$
b. $g \circ f(1) = 4$, $g \circ f(4) = 7$ og $g \circ f(0) = 1$
c. $f \circ g(x) = \sqrt{3x+1}$
d. $g \circ f(x) = 3 \cdot \sqrt{x} + 1$

Opg. 224

a. 3
b. 2
c. 5
d. -1
e. 1
f. 0
g. 5
h. 5
i. -5
j. -2
k. 1
l. 1

Opg. 225

a. $\left(x^2 + 3x\right)^5$

Opg. 226

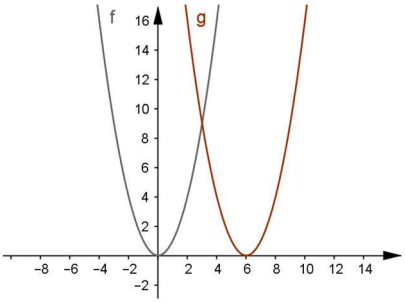
a. Indre funktion: $3x - 8$
   Ydre funktion: x^3
b. Indre funktion: $4x + 2$
   Ydre funktion: $\sqrt{x}$
c. Indre funktion: $-3x + 1$
   Ydre funktion: $\frac{1}{x}$
d. Indre funktion: $5x - 1$
   Ydre funktion: $5 \cdot 3^x$

Opg. 227

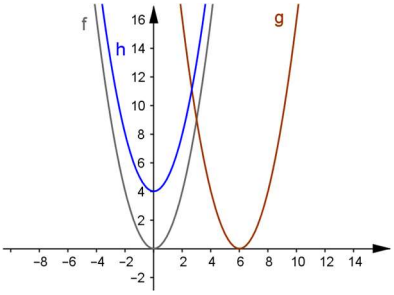
a. Indre funktion: $x^2 - 5x$
   Ydre funktion: x^{10}
b. Indre funktion: $20x^3 - 4x$
   Ydre funktion: $\frac{4}{x}$
c. Indre funktion: $3x^2 - 32x$
   Ydre funktion: $\sqrt{x}$
d. Indre funktion: $-x^2$
   Ydre funktion: $100 \cdot 1,3^x$

Opg. 228

a. 228a



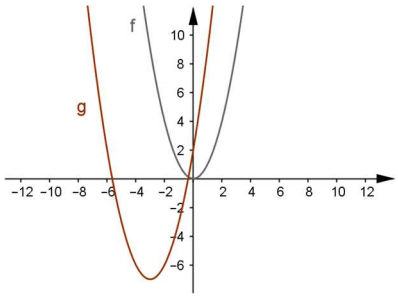
b. Grafen for *g* er parallelforskudt 6 vandret til højre for *f*
c. 228c



d. Grafen for *h* er parallelforskudt 4 lodret op ift. *f*

Opg. 229

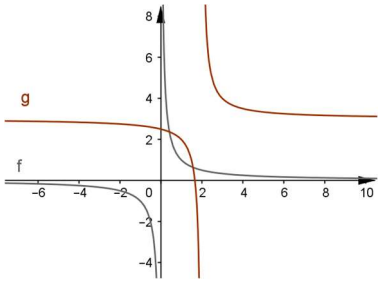
a. 229a



b. Grafen for g er parallelforskudt 7 lodret ned, og 3 vandret til venstre ift. f

Opg. 230

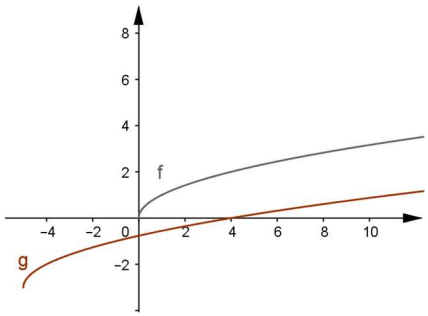
a. 230a



b. Grafen for g er parallelforskudt 3 lodret op, og 2 vandret til højre ift. f

Opg. 231

a. 231a



b. Grafen for g er parallelforskudt 3 lodret ned, og 5 vandret til venstre ift. f

Opg. 232

a. $(2x-5)+8$

b. $(2x-5)-3$

c. $2 \cdot (x-7) - 5$
d. $2 \cdot (x+1) - 5$

Opg. 233

a. $x^2 + 3$
b. $(x-4)^2$
c. $(x-5)^2 + 8$
d. $(x+2)^2 - 4$