Kernestof 3
ISBN 978 87 7066 8767

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Facitliste til opgaver 8

Opg. 801

a.
$g(1,1)=1$
$g(3,2)=13$
$g(10,5)=145$
$g(-2,4)=-8$

Opg. 802

a.
$g(2,1)\approx 6,84$
$g(3,4)\approx 9,04$
$g(4,6)\approx 12,62$

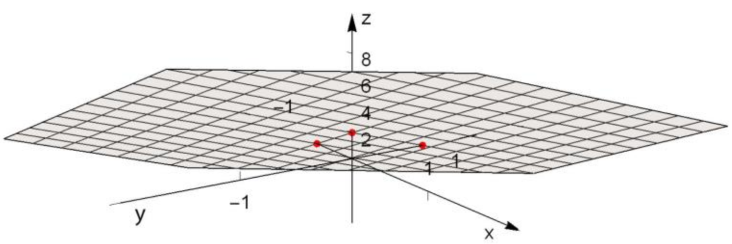
Opg. 803

a.
$f(0,1)=0$
$f(4,e)=-\frac{17}{9}$
$f(9,1)=-3$

Opg. 804

a. Ingen facit

b.

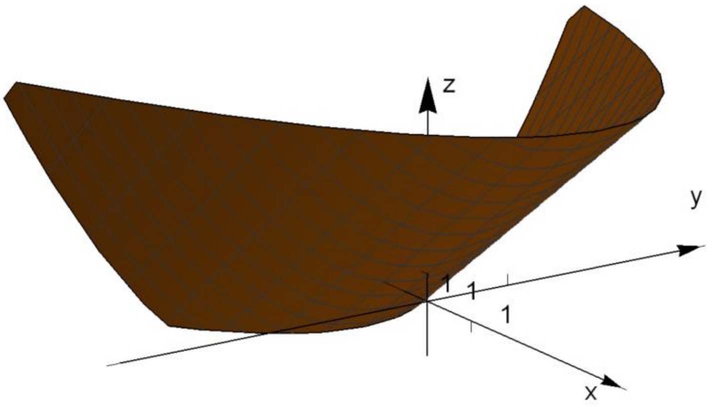


c. Ingen facit

Opg. 805

a. Ingen facit

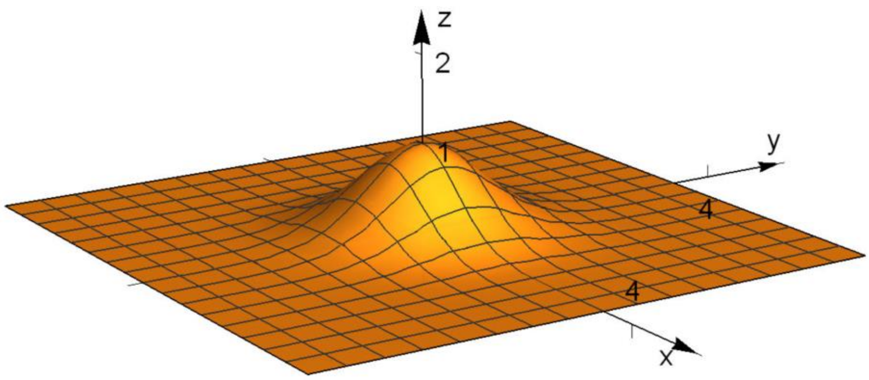
b.



c. Ingen facit

Opg. 806

a.



b. Ingen facit

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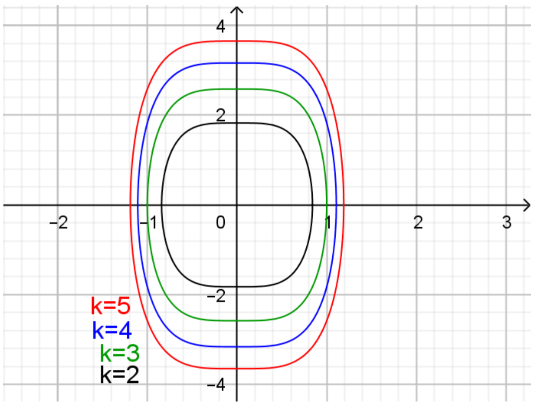
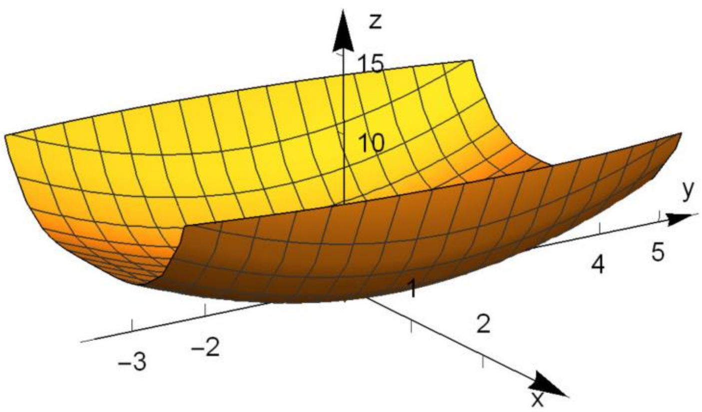
Opg. 807

a.

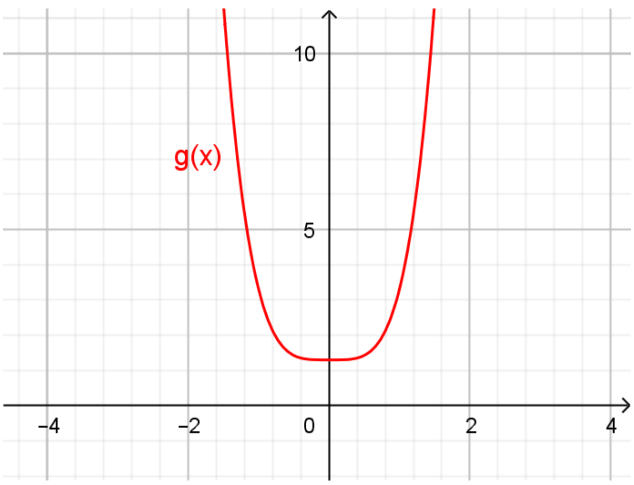


b.



c. $g(x) = 2x^4 + 1{,}3$

d.



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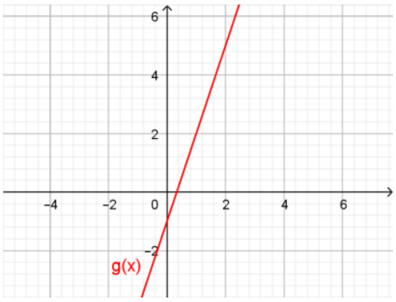
Opg. 808

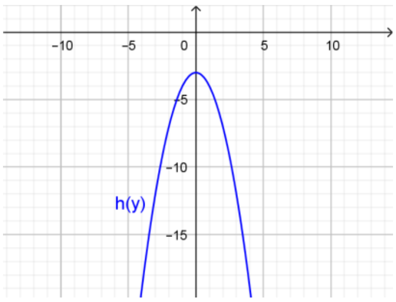
a.

$$g(x) = 3x - 1$$
$$h(y) = -y^2 - 3$$

b.



c.



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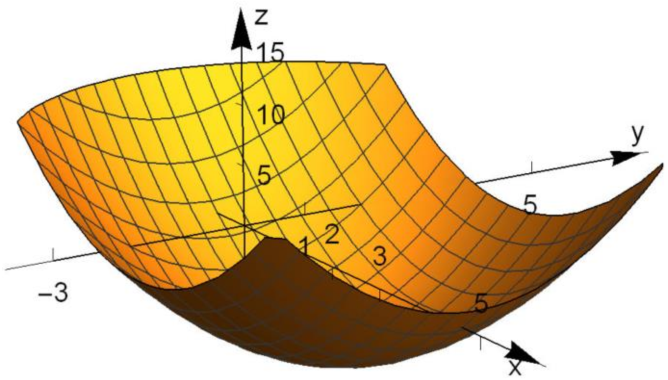
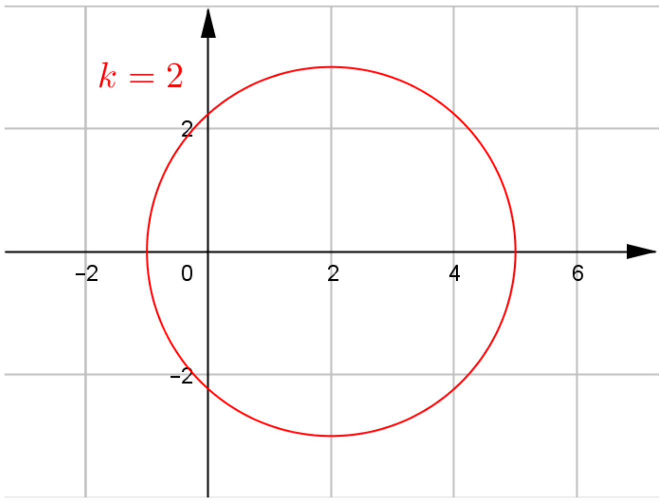
Opg. 809

a.



b.



c. Ligningen $f(x,y)=2$ kan omskrives til $(x-2)^2+y^2=9$. Det kan genkendes som ligningen for en cirkel med centrum i punktet $(2,0)$ og med radius 3.

L&R Uddannelse EGMONT

Opg. 810

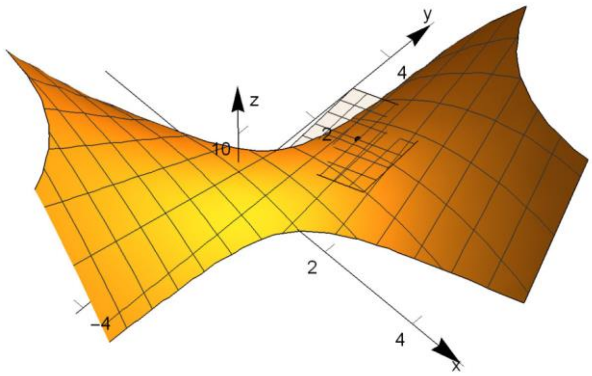
a. $f_x\,'(x,y) = -2x + 3y$
$f_y\,'(x,y) = -4y + 3x$

b. $f_x\,'(1,2) = 4$
$f_y\,'(1,2) = -5$

c. $\nabla f(1,2) = \begin{pmatrix} 4 \\ -5 \end{pmatrix}$

d. $z = 4x - 5y + 5$

e.



Opg. 811

a. $\nabla f(x,y) = \begin{pmatrix} 2x + y \\ x \end{pmatrix}$

b. $\nabla f(5,2) = \begin{pmatrix} 12 \\ 5 \end{pmatrix}$

c. Når x=5 og y=2, vokser funktionen hurtigst i retning af vektoren $\begin{pmatrix} 12 \\ 5 \end{pmatrix}$

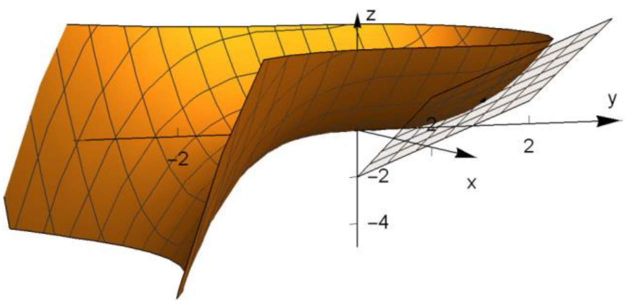
Opg. 812

a. $\nabla f(x,y)=\begin{pmatrix} 2x \\ 1,5y^2 \end{pmatrix}$

b. $\nabla f(1,1)=\begin{pmatrix} 2 \\ 1,5 \end{pmatrix}$

c. $z=2x+1,5y-2$

d.



Opg. 813

a. $z=5x+4y-9$

Opg. 814

a. $\left(1,\ 1,\ \frac{-7}{6}\right)$ - er et lokalt minimum, $\left(-1\ ,\ 1,\ \frac{1}{6}\right)$ - er et saddelpunkt

b. Se svar i a.

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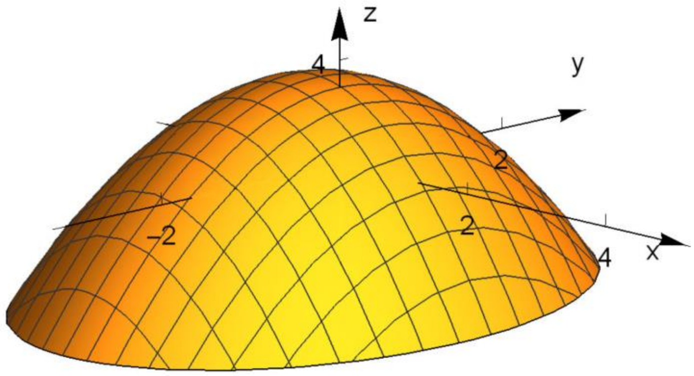
Opg. 815

a. $(0,5\ ;\ 0\ ;\ 3,25)$

b. Lokalt maksimum

c.



Opg. 816

a. Et stationært punkt er et punkt, hvor begge de partielle afledede er nul.

b. Et saddelpunkt – det er hverken et lokalt maksimum eller minimum

c. $z_0 = 34$

Opg. 817

a. Et saddelpunkt

Opg. 818

a. $\frac{\partial}{\partial x}(f(x,y)) = 2x+2$

$\frac{\partial}{\partial y}(f(x,y)) = -2y$

b. (−1, 0, 0)

c. Da $r \cdot t - s^2 = 2 \cdot (-2) - 0^2 = -4 < 0$, må punktet være et saddelpunkt

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Opg. 819

a. $(0\,;-1\,;-2{,}5)$ - er et lokalt minimum, $(0\,;1\,;2{,}5)$ - er et lokalt maksimum

b. Se svar i a.

c.