Supplerende facitliste (Chiang and Wainwright)

10.2.4 a) 0.07 b) 0.03

10.3.4 a og c er gyldige

10.4.5 d) $2\ln(y)/\ln(10)$

4.6.4 F er invers til D og G er invers til E (og omvendt)

10.5.1 d) $-10t\exp(2-t^2)$

10.5.3 d) $10/(t+1)$

10.5.4 a) $\ln(5)5^t$ b) $1/(\ln(2)(t+1))$

4.1.2

$$A = \begin{bmatrix} 1 & -1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & -a_1 & -a_2 \\ 0 & 1 & 0 & 0 & -b_1 & -b_2 \\ 0 & 0 & 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 & -\alpha_1 & -\alpha_2 \\ 0 & 0 & 0 & 1 & -\beta_1 & -\beta_2 \end{bmatrix}$$

$d = (0, a_0, b_0, 0, \alpha_0, \beta_0)^\mathsf{T}$

4.2.1 b)

$$\begin{bmatrix} 1 & 4 \\ 0 & -8 \end{bmatrix}$$

d)

$$\begin{bmatrix} 16 & 22 \\ 24 & -6 \end{bmatrix}$$

4.2.2 a) ja

$$\begin{bmatrix} 28 & 64 \\ 6 & 0 \\ 13 & 8 \end{bmatrix}$$

nej
b) ja $\begin{bmatrix} 14 & 4 \\ 69 & 30 \end{bmatrix}$ ja $\begin{bmatrix} 20 & 16 \\ 21 & 24 \end{bmatrix}$

4.2.4) c)

$$\begin{bmatrix} 3x + 5y \\ 4x + 2y - 7z \end{bmatrix}$$

d)

$$\begin{bmatrix} 7a + c & 2b + 4c \end{bmatrix}$$

4.2.6 e) $x^2 + (x+1)^2 + (x+2)^2 + (x+3)^2$

4.3.2

$$xy' = \begin{bmatrix} x_1y_1 & x_1y_2 \\ x_2y_1 & x_2y_2 \end{bmatrix} \quad y'y = y_1^2 + y_2^2 \quad zz' = \begin{bmatrix} z_1^2 & z_1z_2 \\ z_1z_2 & z_2^2 \end{bmatrix}$$
$$yw' = \begin{bmatrix} y_1w_1 & y_1w_2 & y_1w_3 \\ y_2w_1 & y_2w_2 & y_2w_3 \end{bmatrix} \quad x \bullet y = x_1y_1 + x_2y_2$$

4.5.1 b) A 2×2 d $[x_1x_2]$ 2×2

4.6.1

$$C' = \begin{bmatrix} 1 & 6 \\ 0 & 1 \\ 9 & 1 \end{bmatrix}$$

5.1.3 b) ja c) ja.

5.1.5 c) rang 3.

5.2.1 f) $2x + 8xy - 30$.

5.4.2 a)

$$\begin{bmatrix} 1/5 & -2/5 \\ 0 & 1 \end{bmatrix}$$

5.4.4 b)

$$\begin{bmatrix} 0 & -0.2 & 0.3 \\ -1 & 0.6 & 0.1 \\ 0 & 0.4 & -0.1 \end{bmatrix}$$

5.4.6 b) (2,5,1)

7.4.1 b) $7 + 6x_2^2$ $12x_1 - 27x_2$ d) $5/(x_2 - 2)$ $-(5x_1 + 3)/(x_2 - 2)^2$

7.4.3 b) -7 d) 1

7.4.2 a) $2x+5y, 5x-3y^2$ b) $3x^2-4x-3y, -3x-6$ c) $5y/(x+y)^2, -5x/(x+y)^2$ d) $(x^2y + y/(xy)^2, (-x^3 + x)/(xy)^2$

7.4.7 a) $(2x, 3y^2, 4z^3)$ b) (yz, xz, yx)

7.5.2 $(-\gamma + \alpha(1 - \delta) + \delta(1 - I_0) + \delta(1 - G_0))/(1 + \beta(\delta - 1))^2$

8.1.1 b) $dy = (14x - 51)dx$

8.1.3 b) $b/(b + a/Y)$ c) ϵ_{CY} mindre end 1 da $a/Y > 0$

8.1.6 a) -1/4 b) 5/8.

8.2.1 grad U $\bullet$ $(dx_1, dx_2, \ldots, dx_n)$

8.2.3 b) $dy = [2x_2^2/(x_1 + x_2)^2]dx_1 + [2x_1^2/(x_1 + x_2)^2]dx_2$

8.2.4 $\epsilon_{QR} = 0.5R^{1/2}/(a + bP^2 + R^{1/2})$

8.4.1 b) $-8/y^3 + 4y$

8.4.4 a) $\partial w/\partial u = 2a\alpha(\alpha u + \beta v) + b\alpha\gamma u + b(\alpha u + \beta v)\gamma + c$ $\partial w/\partial v = 2a\beta(\alpha u + \beta v) + b\gamma\beta u$

8.5.2 a) $-(3x+y)/(x+6y^2)$ b) $30x^4$ c) $-(14x+2y^2)/(4xy+36y^3)$ d) $6x$

8.5.3 a) $\partial y/\partial x = -(2xy^3+yz)/(3x^2y^2+xz)$ $\partial y/\partial z = -(2z+xy)/(3x^2y^2+xz)$ b) $-(3x^2z^2+4yz)/(3y^2+4xz)$ $-(2x^3z+4xy)/(3y^2+4xz)$ c) $-(6x^2y^3+z^2y^2+4y^3zx^3)/(x^2y^2(9+3x^2z)+2yz(1+xz))$ $-y^2(2xz+1+yx^4)/(x^2y^2(9+3x^2z)+2yz(1+xz))$

11.2.2 $(3,1)$ maximum.

11.2.4 $(0,0)$ minimum.

11.5.1 b) strengt konveks.

11.5.2 b) konveks.

12.2.1 b) (6,2) d) (-0.5,0.5)

12.2.3 a)

$$\frac{\partial Z}{\partial x} = 1 + y - \lambda = 0 \tag{1}$$
$$\frac{\partial Z}{\partial y} = 2 + x - w - \lambda = 0 \tag{2}$$
$$\frac{\partial Z}{\partial w} = 3 - y - 2\lambda = 0 \tag{3}$$
$$\frac{\partial Z}{\partial \lambda} = 10 - x - y - 2w = 0 \tag{4}$$

b)

$$\frac{\partial Z}{\partial x} = 2x + 2y - 2\lambda - \mu = 0 \tag{5}$$
$$\frac{\partial Z}{\partial y} = 2x + w^2 - \lambda = 0 \tag{6}$$
$$\frac{\partial Z}{\partial w} = 2yw - 2\lambda w - \mu = 0 \tag{7}$$
$$\frac{\partial Z}{\partial \lambda} = 24 - 2x - y - w^2 = 0 \tag{8}$$
$$\frac{\partial Z}{\partial \mu} = 8 - x - w = 0 \tag{9}$$

12.6.1 b) homogen af grad 1 d) homogen af grad 1 f) homogen af grad 4.