

## 5. gyakorlat - Mátrix inverze, determinánsok

2009. március 13.

1. (a)  $\underline{\underline{AC}} = \begin{pmatrix} 11 & 11 & 19 \\ 8 & 21 & 15 \end{pmatrix}$   
(b)  $\underline{\underline{BC}} = \begin{pmatrix} 1 & 15 & 3 \\ 6 & 2 & 10 \end{pmatrix}$   
(c)  $\underline{\underline{(A+B)C}} = \begin{pmatrix} 12 & 26 & 22 \\ 14 & 23 & 25 \end{pmatrix}$
2. (a)  $\underline{\underline{A^2}} = \begin{pmatrix} \cos^2 x - \sin^2 & -2 \sin x \cos x \\ 2 \sin x \cos x & \cos^2 x - \sin^2 x \end{pmatrix}$   
(b)  $\underline{\underline{A^{2009}}} = \begin{pmatrix} \cos 2009x & -\sin 2009x \\ \sin 2009x & \cos 2009x \end{pmatrix}$   
(c)  $\underline{\underline{A^{-1}}} = \begin{pmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{pmatrix}$   
(d)  $\underline{\underline{A^{-2009}}} = \begin{pmatrix} \cos 2009x & \sin 2009x \\ -\sin 2009x & \cos 2009x \end{pmatrix}$
3. (a)  $\underline{\underline{A^2}} = \begin{pmatrix} 1 & 0 \\ 2 & 1 \end{pmatrix}$   
(b)  $\underline{\underline{A^{2009}}} = \begin{pmatrix} 1 & 0 \\ 2009 & 1 \end{pmatrix}$   
(c)  $\underline{\underline{A^{-1}}} = \begin{pmatrix} 1 & 0 \\ -1 & 1 \end{pmatrix}$   
(d)  $\underline{\underline{A^{-2009}}} = \begin{pmatrix} 1 & 0 \\ -2009 & 1 \end{pmatrix}$
4. (a)  $\underline{\underline{A^{-1}}} = \begin{pmatrix} -\frac{36}{17} & \frac{19}{34} & -\frac{6}{17} \\ -\frac{7}{17} & \frac{11}{34} & \frac{1}{17} \\ \frac{10}{17} & -\frac{3}{17} & \frac{1}{17} \end{pmatrix}$   
(b) Nincs inverz
5. (a)  $x_1 = 41, x_2 = -17$   
(b)  $x_1 = -7, 5b_1 + 0, 5b_2 - 2, 5b_3, x_2 = 0, 5b_1 + 0, 5b_2 - 0, 5b_3, x_3 = 2, 5b_1 - 0, 5b_2 - 0, 5b_3$

6. (a) -21  
(b) -5  
(c) -7  
(d) 18  
(e) 6  
(f) -2
7. (a)  $k \neq 3, k \neq -1$   
(b)  $k \neq 1$
8. (a) 0  
(b)  $k^3 - 8k^2 - 10k + 55$
9. (a)  $\underline{\underline{A}}^{-1} = \begin{pmatrix} 19 & 4 & -5 \\ -31 & -6 & 8 \\ 16 & 3 & -4 \end{pmatrix}$   
(b)  $\underline{\underline{A}}^{-1} = \begin{pmatrix} \frac{1}{3} & 0 & 0 \\ -3 & 1 & 0 \\ \frac{11}{6} & -\frac{1}{2} & \frac{1}{4} \end{pmatrix}$
10.  $x_1 = 3, x_2 = 5, x_3 = -1, x_4 = 8$