

5. gyakorlat - Mátrix inverze, determinánsok

2010. március 9.

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) $k^3 - 8k^2 + 8k - 7$
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. (a) $x_1 = 3, x_2 = 5, x_3 = -1, x_4 = 8$
(b) Nem oldható meg a Cramer-szabállyal, mert az együtthatómátrix determinánsa 0.