

1718772 오성하, 컴퓨터학과

1.

$$A^T = \text{전치행렬}$$

$$= \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$$

$$A^2 = A \cdot A$$

$$= \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$$

2x2 곱은 2x2 행렬이 나온다

$$= \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$\therefore A^T = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$$

$$A^2 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

2.

반대행렬 $B = -B^T$ 가 만족해야함.

$$-B^T = \begin{bmatrix} -a & -1 & c \\ -b & -c & 3 \\ -2 & -d & -f \end{bmatrix}$$

$$\begin{bmatrix} a & b & 2 \\ -1 & c & d \\ e & 3 & f \end{bmatrix} = \begin{bmatrix} -a & -1 & c \\ -b & -c & 3 \\ -2 & -d & -f \end{bmatrix}$$

$$a = -a$$

$$b = 1 \quad c = -c$$

$$-e = 2 \quad d = -2$$

$$f = -f$$

$$c + c = 0 \quad \therefore c = 0$$

$$a + a = 0 \quad \therefore a = 0$$

$$f + f = 0 \quad \therefore f = 0$$

$$\therefore a=0, b=1, c=0, d=-2, e=-2, f=0$$

3.

행렬 A, 선자 2 인하여

$$\begin{vmatrix} a & b & c \\ 4 & g & h \\ d & e & f \end{vmatrix} = 4 \begin{vmatrix} a & b & c \\ g & h & i \\ d & e & f \end{vmatrix} = 4 \begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix}$$

$$= 4 \times 5$$

$$= 20$$

답: 20

4.

행렬의 선자 2 인하여

$$\begin{vmatrix} a & b & c \\ 3a+5a & 3b+5b & 3c+5c \\ g & h & i \end{vmatrix}$$

\downarrow ①행 $\times (5)$ + ②행

$$\begin{vmatrix} a & b & c \\ 3d & 3e & 3f \\ g & h & i \end{vmatrix} = 3 \begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix}$$

$$= 3 \times 5$$

$$= 15$$

답: 15

$$5. \rightarrow \begin{vmatrix} x & y & z \\ 5 & 3 & 2 \end{vmatrix} \begin{vmatrix} x & y & z \\ 5 & 3 & 2 \end{vmatrix}$$

$$\begin{cases} x-y+z=1 \\ 2y-2z=1 \\ 2x+y=1 \end{cases} \quad \begin{cases} x-y+z=1 \\ 2y-2z=1 \\ 2x+y=1 \end{cases}$$

$$\downarrow$$

$$\begin{bmatrix} 1 & -1 & 1 \\ 0 & 2 & -1 \\ 2 & 3 & 0 \end{bmatrix}$$

\downarrow ①행 $\times (2)$ + ③행

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

\downarrow ②행 $\times \frac{1}{2}$, ③행 $\times \frac{1}{2}$

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

\downarrow ③행 - ②행

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

\downarrow ③행 $\times (-2)$

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

\downarrow ②행 $\times 2$

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

\downarrow ①행 + ②행

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

\downarrow ①행 - ②행

$$\begin{bmatrix} 1 & -1 & 3 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

\downarrow ①행 $\times (-1)$

$$\begin{bmatrix} -1 & 1 & -3 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

\downarrow ①행 + ②행

$$\begin{bmatrix} 1 & 3 & -4 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

\downarrow ①행 - ②행 $\times 2$

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

\downarrow ①행 $\times (-1)$

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

\downarrow ①행 - ②행

$$\begin{bmatrix} 1 & -1 & 3 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

\downarrow ①행 $\times (-1)$

$$\begin{bmatrix} -1 & 1 & -3 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

\downarrow ①행 + ②행

$$\begin{bmatrix} 1 & 3 & -4 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

1) 18.972. 0.534, 0.0012523

6. $\frac{\det(A)}{|A|} \quad A = \begin{bmatrix} 1 & 0 & 2 \\ 2 & 1 & 1 \\ -2 & -1 & 5 \end{bmatrix}$

$|A| = -5 - 6 + 4 = -1$

$\text{adj}(A) = \begin{bmatrix} c_{11} & -c_{12} & c_{13} & -c_{14} & c_{15} & -c_{16} \\ -c_{21} & c_{22} & -c_{23} & c_{24} & -c_{25} & c_{26} \\ c_{31} & -c_{32} & c_{33} & -c_{34} & c_{35} & -c_{36} \end{bmatrix}$
 $= \begin{bmatrix} -1 & -2 & -2 \\ -3 & -1 & 0 \\ -1 & -1 & -1 \end{bmatrix}$

$\frac{\det(A)}{|A|} = \frac{\begin{bmatrix} -1 & -2 & -2 \\ -3 & -1 & 0 \\ -1 & -1 & -1 \end{bmatrix}}{-1} = \begin{bmatrix} 1 & 2 & 2 \\ 3 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$

$A^{-1} = \begin{bmatrix} 1 & 2 & 2 \\ 3 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$

7. $\begin{bmatrix} 1 & 1 & 1 & 2 \\ 1 & 2 & 1 & 3 \\ 1 & 1 & a & a \end{bmatrix}$ $\begin{bmatrix} 1 & 1 & 1 & 2 \\ 0 & 1 & 1 & 2 \\ 0 & 0 & a-2 & a-2 \end{bmatrix}$
 $a = 2$

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

$-(a^2+4)Z = a-2$

$-(a^2+4)Z = 0-2$

$(a-2)(a+2)Z = -a+2$

if $a=2 \dots 0 \cdot Z = 0 \Rightarrow$ 무수히 많은 해

if $a \neq 2 \dots 0 \neq 4 \Rightarrow$ 해는 유일

8.

$A = \begin{bmatrix} 2 & 4 & 7 \\ 6 & 0 & 3 \\ 1 & 5 & 5 \end{bmatrix}$

$2x(-1)^{1+1} \begin{vmatrix} 0 & 3 \\ 5 & 5 \end{vmatrix} + 4(-1)^{1+2} \begin{vmatrix} 6 & 3 \\ 1 & 5 \end{vmatrix} + 7(-1)^{1+3} \begin{vmatrix} 6 & 0 \\ 1 & 1 \end{vmatrix}$

$= 2x(-15) - 4x(15) + 7x(6)$

$= -30 - 60 + 42 = -48$

$= -90 + 210$

$= 120$

9.

$A = \begin{bmatrix} 4 & 2 \\ 3 & 3 \end{bmatrix}$

$AX = \lambda X$

$|A - \lambda I| = 0$

$\begin{bmatrix} 4-\lambda & 2 \\ 3 & 3-\lambda \end{bmatrix} = \begin{bmatrix} 4-\lambda & 2 \\ 3 & 3-\lambda \end{bmatrix}$

$= \begin{bmatrix} 4-\lambda & 2 \\ 3 & 3-\lambda \end{bmatrix}$

$\begin{bmatrix} 4-\lambda & 2 \\ 3 & 3-\lambda \end{bmatrix} = 0$

$(4-\lambda)(3-\lambda) - 6 = 0$

$12 - 4\lambda - 3\lambda + \lambda^2 - 6 = 0$

$\lambda^2 - 7\lambda + 6 = 0 \Rightarrow$ $\lambda = 6, \lambda = 1$

$(\lambda - 6)(\lambda - 1) = 0$

$\lambda = 6$

$\lambda = 1$

$\lambda = 6$

$\lambda = 1$

$\lambda = 6$

$\lambda = 1$

$\lambda = 6$

$\lambda = 1$

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$\lambda = 1$

$\lambda = 6$

$\lambda = 1$

$\lambda = 6$

[문제 17] 비정화면에 있는 결손 플터를 통해

[문제 18] 시퀀스 1 작업을 F4V 파일로 내보

[문제 19] 광고영상 시퀀스에서 작업 영

(참고 : 비디오 형식은 MPEG4 이어야 합니

[문제 20] 현재의 작업영역을 New 라는 이

17.18.1992 오승환, 정수민

10.

$$\begin{bmatrix} 1 & 1 & 2w \\ 0 & 2 & 13w \\ 2 & 1 & -2w \\ 1 & -1 & 0 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -4 \\ 4 \\ 5 \\ 4 \end{bmatrix}$$

↓

$$\begin{bmatrix} 1 & 1 & 2w \\ 0 & 2 & 13w \\ 0 & -1 & -2w \\ 0 & -2 & -2w \end{bmatrix} \rightarrow 7.$$

$$|x| \begin{bmatrix} 2 & 1 & 3w \\ -1 & -3 & -2w \\ -2 & 0 & -2w \end{bmatrix} \rightarrow ?$$

$$\begin{aligned} 12w + 4w \\ -18w + 4w - 2w \end{aligned}$$

11.

$$\cos \theta = \frac{3}{\sqrt{6} \times \sqrt{6}} = \frac{3}{6} = \frac{1}{2}$$

$$\cos \theta = \frac{1}{2} \Rightarrow \theta = 60^\circ = \frac{\pi}{3}$$

12.

$$\frac{\vec{b} \cdot \vec{a}}{\|\vec{b}\|} = \frac{3}{6} = \frac{1}{2}$$

$$\begin{aligned} &= \frac{1}{2} (1, 1, 2) \\ &= \left(\frac{1}{2}, \frac{1}{2}, 1 \right) \end{aligned}$$

13.

$$\vec{a} = (2, -1, 1)$$

$$\vec{b} = (y, -4, 2)$$

$$\vec{a} \cdot \vec{b} = 0 \rightarrow 4y$$

$$2y + 4x + 2 = 0$$

$$y + 2x + 1 = 0$$

$$y + 2x = -1$$

$$y = -1 - 2x$$

$$x - y = 2$$

$$x = 2 + y$$

$$y = -1 - 2(2 + y)$$

$$y = -1 - 4 - 2y$$

$$3y = -5$$

$$y = -\frac{5}{3}$$

$$x + \frac{5}{3} = 2$$

$$x + \frac{5}{3} = \frac{6}{3}$$

$$x = \frac{1}{3}$$

$$\begin{aligned} \vec{c}: x &= \frac{1}{3} \\ y &= -\frac{5}{3} \end{aligned}$$

[문제 9] 바탕

[문제 10]

'안정화판(St

[문제 11] 비

변경합니다.

[문제 12] 드

[문제 13] I

Point 를 9x

[문제 14]

바탕화면에

[문제 15]

프로젝트를

[문제 16] 3



14)

$$\vec{c} = \vec{p} \vec{q} - \vec{o} \vec{p} = (-1, 2, 0) - (-2, 0, 2) = (-3, 2, -2)$$

$$b = \vec{PA} - \vec{R} - \vec{OP} = (6-2, 4-2, 3-0) = (-2, 2, 3)$$

$$\frac{(\text{恒} \times b)}{2} \rightarrow \begin{vmatrix} 1 & 0 & 4 \\ 3 & 2 & 2 \\ 2 & 2 & 3 \end{vmatrix}$$

$$\frac{\sqrt{225}}{2} = \frac{15}{2}$$

$$\frac{5L}{6} = \frac{15}{2}$$

100-257160

$$\begin{array}{r} 225 \\ 45 \\ \hline 5 \overline{) 225} \end{array}$$

$$\frac{5 \times 9 \times 5}{5 \times 3 \times 3 \times 5}$$

$$(15)$$