

## CHAPTER 08 행렬과 연립 선형방정식

### [8.1 행렬과 연산]

1.  $x = \pm 3, y = \pm 12$ (복호동순)

2.  $-\frac{1}{3}A = \begin{pmatrix} -\frac{1}{3} & -\frac{2}{3} \\ -1 & -\frac{4}{3} \end{pmatrix}$

$$A + 2B = \begin{pmatrix} 11 & 14 \\ 17 & 20 \end{pmatrix}$$

$$A - B = \begin{pmatrix} -4 & -4 \\ -4 & -4 \end{pmatrix}$$

$$A - B^T = \begin{pmatrix} -4 & -5 \\ -3 & -4 \end{pmatrix}$$

3.  $AB = \begin{pmatrix} 14 & -10 \\ 28 & -14 \end{pmatrix}$

$$BA = \begin{pmatrix} 18 & 24 \\ -17 & -18 \end{pmatrix}$$

$$\therefore AB \neq BA$$

4.  $(AB)^T = \begin{pmatrix} 23 & 39 \\ 10 & 60 \end{pmatrix}$

$$B^T A^T = \begin{pmatrix} 23 & 39 \\ 10 & 60 \end{pmatrix}$$

5. 생략

6.  $A = \begin{pmatrix} a & b \\ 2a & 2b \end{pmatrix}, B = \begin{pmatrix} -b & b \\ a & -a \end{pmatrix}$

7. 생략

### [8.2 연립 선형방정식과 가우스 소거법]

8. 
$$\begin{aligned} x_3 &= \frac{15}{8} \\ x_2 &= \frac{9}{8} \\ x_1 &= \frac{27}{8} \end{aligned}$$

CHAPTER 08 행렬과 연립 선형방정식

9. 
$$\begin{aligned}x_3 &= t \\x_2 &= \frac{1}{5}t \\x_1 &= -\frac{3}{5}t + 1\end{aligned}$$

10. 
$$\begin{aligned}x_4 &= t \\x_3 &= 4 - 2t \\x_2 &= t \\x_1 &= 1\end{aligned}$$

11. 
$$x_1 = x_2 = x_3 = 0$$

12. 
$$\begin{aligned}x_3 &= t \\x_2 &= -2t \\x_1 &= t\end{aligned}$$

[8.3 행렬의 계수]

13. rank A = 3

14. rank B = 3

15. rank C = 2

16. 일차종속

17. 일차독립

18. 일차독립

19. 생략

20.  $a = 2$

21.  $a - b - c = 0$

## CHAPTER 08 행렬과 연립 선형방정식

### [8.4 행렬식]

22.  $x - 2y + z$

23. 0

24. 0

25. 34

26.  $x = 1$

27.  $x = 2, -2 \pm \sqrt{-3}$

28.  $k$

29.  $-k$

30.  $6k$

31.  $-k$

32. 24

33. 24

34.  $-6$

35. 0

36. 0

37.  $(b-a)(c-a)(c-b)$

38.  $a \neq -1$

39.  $b = 2$

CHAPTER 08 행렬과 연립 선형방정식

[8.5 역행렬]

40.  $A^{-1} = \begin{pmatrix} -2 & 1 \\ \frac{3}{2} & -\frac{1}{2} \end{pmatrix}$

41.  $A^{-1} = -\frac{1}{2} \begin{pmatrix} -2 & 5 & -3 \\ -4 & 16 & -10 \\ 2 & -10 & 6 \end{pmatrix}$

42.  $A^{-1} = -\frac{1}{3} \begin{pmatrix} -12 & -3 & 3 \\ 31 & 7 & -9 \\ -20 & -5 & 6 \end{pmatrix}$

43.  $A^{-1} = \begin{pmatrix} -1 & 0 & 1 \\ 0 & -1 & 1 \\ 1 & 1 & -1 \end{pmatrix}$

44.  $A^{-1} = \begin{pmatrix} \frac{1}{a} & 0 & 0 \\ 0 & \frac{1}{b} & 0 \\ 0 & 0 & \frac{1}{c} \end{pmatrix}$

45. 
$$\begin{aligned} x_3 &= \frac{13}{53} \\ x_2 &= -\frac{51}{53} \\ x_1 &= \frac{61}{53} \end{aligned}$$

46. 
$$\begin{aligned} x_3 &= -15 \\ x_2 &= 25 \\ x_1 &= 7 \end{aligned}$$

47.  $\lambda = 4, -1$

48.  $A = \frac{1}{26} \begin{pmatrix} 8 & -1 \\ 3 & 11 \end{pmatrix}$