

[Chapter 08] 연습문제 정답

8.1

[풀이]

$$A + B = \begin{bmatrix} 2 & 11 \\ 0 & 2 \end{bmatrix}$$

$$B + A = \begin{bmatrix} 2 & 11 \\ 0 & 2 \end{bmatrix}$$

8.2

[풀이]

$$A - B = \begin{bmatrix} 2 & -3 \\ -10 & 4 \end{bmatrix}$$

$$B - A = \begin{bmatrix} -2 & 3 \\ 10 & -4 \end{bmatrix}$$

8.3

[풀이]

$$\frac{1}{2} \left(C + \frac{1}{2} D \right) = \begin{bmatrix} -\frac{5}{4} & -\frac{3}{4} & \frac{9}{4} \\ 1 & \frac{11}{4} & \frac{3}{4} \end{bmatrix}$$

$$\frac{1}{2} C + \frac{1}{4} D = \begin{bmatrix} -\frac{5}{4} & -\frac{3}{4} & \frac{9}{4} \\ 1 & \frac{11}{4} & \frac{3}{4} \end{bmatrix}$$

8.4

[풀이]

$A + D$ 정의되지 않음

$$C - D = \begin{bmatrix} -4 & 6 & 0 \\ -4 & 4 & 3 \end{bmatrix}$$

8.5

[풀이]

$2F - G$ 정의되지 않음

$$2F + J = \begin{bmatrix} 4 & -1 & 4 \\ 4 & 12 & 6 \\ 7 & 2 & 11 \end{bmatrix}$$

8.6

[풀이]

$$\frac{1}{3}E + \frac{5}{6}I = \begin{bmatrix} \frac{2}{3} \\ \frac{10}{3} \\ \frac{25}{6} \end{bmatrix}$$

$$\frac{1}{3}(E + \frac{5}{2}I) = \begin{bmatrix} \frac{2}{3} \\ \frac{10}{3} \\ \frac{25}{6} \end{bmatrix}$$

8.7

[풀이]

$$G + 2G = \begin{bmatrix} 12 & 15 \\ -12 & 0 \\ 3 & -6 \end{bmatrix}$$

$$5G - 2G = \begin{bmatrix} 12 & 15 \\ -12 & 0 \\ 3 & -6 \end{bmatrix}$$

$$3G = \begin{bmatrix} 12 & 15 \\ -12 & 0 \\ 3 & -6 \end{bmatrix}$$

8.8

[풀이]

$$3(7H) = [0 \ 42 \ 105]$$

$$21H = [0 \ 42 \ 105]$$

8.9

[풀이]

$$HI = 29$$

$$IH = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 4 & 10 \\ 0 & 10 & 25 \end{bmatrix}$$

8.10

[풀이]

$$FG = \begin{bmatrix} 8 & 5 \\ -25 & -16 \\ 19 & 14 \end{bmatrix}$$

GF 정의되지 않음

8.11

[풀이]

GH 정의되지 않음

$$HG = [-3 \ -10]$$

8.12

[풀이]

JH 정의되지 않음

$$HJ = \begin{bmatrix} 11 & 14 & 25 \end{bmatrix}$$

8.13

[풀이]

$$HFG = \begin{bmatrix} 45 & 38 \end{bmatrix}$$

8.14

[풀이]

$$EHJ = \begin{bmatrix} 22 & 28 & 50 \\ 55 & 70 & 125 \\ 0 & 0 & 0 \end{bmatrix}$$

8.15

[풀이]

$$EHFI = \begin{bmatrix} 250 \\ 625 \\ 0 \end{bmatrix}$$

8.16

[풀이]

$$I^T I = 29$$

$$II^T = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 4 & 10 \\ 0 & 10 & 25 \end{bmatrix}$$

8.17

[풀이]

$$J + J^T = \begin{bmatrix} 4 & 9 & 3 \\ 9 & 4 & 2 \\ 3 & 2 & 10 \end{bmatrix}$$

8.18

[풀이]

$$GG^T J^T = \begin{bmatrix} 42 & 296 & -103 \\ -32 & -96 & 28 \\ 4 & -56 & 23 \end{bmatrix}$$

$$JGG^T = \begin{bmatrix} -44 & 104 & -50 \\ -3 & 8 & -1 \\ 134 & -84 & 1 \end{bmatrix}$$

8.19

[풀이]

$$\therefore x_2 = -2, x_1 = 2$$

8.20

[풀이]

$$\therefore x_2 = -\frac{2}{11}, x_1 = \frac{1}{11}$$

8.21

[풀이]

$$\therefore x_1 = 1, x_2 = -1, x_3 = 2$$

8.22

[풀이]

$$\begin{cases} x_1 = 1 - \frac{7}{5}x_3 \\ x_2 = -\frac{3}{5}x_3 \end{cases}$$

x_3 는 임의의 수

8.23

[풀이]

해는 존재하지 않는다.

8.24

[풀이]

$$\therefore x_1 = 2, x_2 = 0, x_3 = 1, x_4 = 3$$

8.25

[풀이]

$$a^2 + b^2$$

8.26

[풀이]

36

8.27

[풀이]

-1

8.28

[풀이]

$$\therefore (a-b)(b-c)(c-a)$$

8.29

[풀이]

$$(a+b+c)(a^2+b^2+c^2-ab-bc-ca)$$

8.30

[풀이]

$$4a^2b^2c^2$$

8.31

[풀이]

생략

8.32

[풀이]

생략

8.33

[풀이]

$$\left[\begin{array}{cc} \frac{a}{a^2-b^2} & \frac{-b}{a^2-b^2} \\ \frac{-b}{a^2-b^2} & \frac{a}{a^2-b^2} \end{array} \right]$$

8.34

[풀이]

$$\left[\begin{array}{cc} \cos\alpha & \sin\alpha \\ \sin\alpha & -\cos\alpha \end{array} \right]$$

8.35

$$\left[\begin{array}{cc} \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \end{array} \right]$$

8.36

[풀이]

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

8.37

[풀이]

$$\begin{bmatrix} \frac{2}{11} & \frac{1}{11} & \frac{2}{11} \\ -\frac{1}{11} & \frac{5}{11} & \frac{17}{55} \\ 0 & 0 & \frac{1}{10} \end{bmatrix}$$

8.38

[풀이]

$$\begin{bmatrix} 0 & 0 & \frac{1}{a} \\ 0 & \frac{1}{b} & 0 \\ \frac{1}{c} & 0 & 0 \end{bmatrix}$$