

1. (a) $3x - 4y + 2yx = 8$
 계수가 174이기 때문에 선택

(b) $x_1 - 5x_2 + x_3 - x_3 = 5$
 " 선택

(c) $3, 14x + 3y = \pi$
 " 선택

(d) $2x_1 - 3x_2 - \sqrt{3}x_3 = 4$
 " 선택

2. $[-2 \ 3 \ 5], \begin{bmatrix} 1 \\ 5 \\ 2 \end{bmatrix}$

$1 \times 3 \quad 3 \times 1 \rightarrow 1 \times 1$

$(-2 \times 1) + (3 \times 5) + (5 \times 2)$

$= 23$

3. AB 의 행렬 크기가 4×3 이라 할 때, 다음식이 성립한다.

A	B
$4 \times 1 \cdot 1 \times 3$	
$4 \times 2 \cdot 2 \times 3$	
$4 \times 3 \cdot 3 \times 3$	
$4 \times 4 \cdot 4 \times 3$	
$4 \times 5 \cdot 5 \times 3$	

4.

$$A = \begin{bmatrix} 2 & 4 & 8 \\ 3 & -1 & 9 \\ -5 & 0 & 2 \end{bmatrix}$$

대각항은 2, -1, 2 이고

$$\begin{aligned} \text{tr}(A) &= 2 + (-1) + 2 \\ &= \boxed{-3} \end{aligned}$$

5. $A = \begin{bmatrix} 1 \\ 2 \\ -3 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 4 & -1 \end{bmatrix}$

(2) $A + B^T$

(1) $A^T A$ $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} + \begin{bmatrix} 2 \\ 4 \\ -1 \end{bmatrix} = \begin{bmatrix} 1+2 \\ 2+4 \\ 3-1 \end{bmatrix} = \begin{bmatrix} 3 \\ 6 \\ 2 \end{bmatrix}$

$$\begin{bmatrix} 1 & 2 & -3 \end{bmatrix} \cdot \begin{bmatrix} 1 \\ 2 \\ -3 \end{bmatrix} = (1 \cdot 1) + (2 \cdot 2) + (-3 \cdot -3) = \boxed{14}$$

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6.

$$B = \begin{bmatrix} 1 & -6 & 2x \\ y & z & -2 \\ x & -2 & 5 \end{bmatrix} \quad \begin{array}{l} y = -6 \\ x = 2z \rightarrow x = 0 \\ z = 2 \end{array}$$

1)

$$A = \begin{bmatrix} 0 & 0 & -1 \\ 0 & a & c+1 \\ b & -2 & 0 \end{bmatrix} \quad \begin{array}{l} a = a \\ b = 1 \\ c+1 = -(c-2) \\ c = 1 \end{array}$$

B. ① Ref ② X ③ RREF ④ RREF
⑤ Ref ⑥ Ref ⑦ RREF ⑧ Ref

d.

$$A = \begin{bmatrix} 2 & 2 & -1 & 6 & 4 \\ 4 & 4 & 1 & 10 & 1 \\ 8 & 8 & -1 & 26 & 23 \end{bmatrix} \quad -2 \times R_1 + R_2 \rightarrow R_2$$

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$$= \begin{bmatrix} 2 & 2 & -1 & 6 & 4 \\ 0 & 0 & 3 & -2 & 5 \\ 0 & 0 & -1 & 26 & 23 \end{bmatrix}$$

$$-4 \times R_1 + R_3 \rightarrow R_3$$

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

$$\frac{1}{2} \times R_1 \rightarrow R_1$$

$$= \begin{bmatrix} 1 & 1 & -\frac{1}{2} & 3 & 2 \\ 0 & 0 & 3 & -2 & 5 \\ 0 & 0 & 3 & 2 & 7 \end{bmatrix}$$

$$-1 \times R_2 + R_3 \rightarrow R_3$$

$$= \begin{bmatrix} 1 & 1 & -\frac{1}{2} & 3 & 2 \\ 0 & 0 & 3 & -2 & 5 \\ 0 & 0 & 0 & 4 & 2 \end{bmatrix}$$

10.

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

$$\frac{1}{1} \times R_3 \rightarrow R_3$$

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

$$-3 \times R_3 + R_2 \rightarrow R_2$$

$$= \begin{bmatrix} 5 & -4 & 6 \\ 0 & 2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\frac{1}{2} \times R_2 \rightarrow R_2$$

$$= \begin{bmatrix} 5 & -4 & 6 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\begin{aligned} -6 \times R_3 + R_1 &\rightarrow R_1 \\ 4 \times R_2 + R_1 &\rightarrow R_1 \end{aligned}$$

$$= \begin{bmatrix} 5 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\frac{1}{5} \times R_1 \rightarrow R_1$$

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

$$\text{Rank} = \textcircled{3}$$