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1)  $a_{ij} = 2i + 3j$

$$a_{11} = 2 + 3 = 5$$

$$a_{12} = 2 + 6 = 8$$

$$a_{21} = 4 + 3 = 7$$

$$a_{22} = 4 + 6 = 10$$

$$a_{31} = 6 + 3 = 9$$

$$a_{32} = 6 + 6 = 12$$

$$A = \begin{pmatrix} 5 & 8 \\ 7 & 10 \\ 9 & 12 \end{pmatrix}$$

2)  $a_{ij} = i^2 + 4j^2$

$$a_{11} = 1 + 4 = 5$$

$$a_{12} = 1 + 16 = 17$$

$$a_{21} = 4 + 4 = 8$$

$$a_{22} = 4 + 16 = 20$$

$$A = \begin{pmatrix} 5 & 17 \\ 8 & 20 \end{pmatrix}$$

$$R = A$$

3)  $x + 2 = -x$

$$2x = -2$$

$$x = \frac{-2}{2}$$

$$x = -1$$

$$y - 3 = 2y$$

$$-1 = y$$

$$x + y = -2z$$

$$-1 = -2z$$

$$z = \frac{1}{2}$$

$$R: x = -1 \quad y = -1 \quad z = \frac{1}{2}$$

4)  $3x = 2x + 1$

$$x = 1$$

$$y = -x$$

$$y = -1$$

$$z - 1 = x$$

$$z = 1 + 1$$

$$z = 2$$

$$R: x = 1 \quad y = -1 \quad z = 2$$

$$\begin{array}{l}
 5) \quad a_{11}=0 \quad a_{12}=1 \quad a_{13}=\sqrt{2} \quad a_{14}=1 \quad D=1/\sqrt{2} \\
 a_{21}=1 \quad a_{22}=0 \quad a_{23}=1 \quad a_{24}=\sqrt{2} \quad D=1/\sqrt{2} \\
 a_{31}=\sqrt{2} \quad a_{32}=1 \quad a_{33}=0 \quad a_{34}=1 \quad D=\sqrt{2} \\
 a_{41}=1 \quad a_{42}=\sqrt{2} \quad a_{43}=1 \quad a_{44}=0
 \end{array}$$

$$\eta = \begin{pmatrix} 0 & 1 & \sqrt{2} & 1 \\ 1 & 0 & 1 & \sqrt{2} \\ \sqrt{2} & 1 & 0 & 1 \\ 1 & \sqrt{2} & 1 & 0 \end{pmatrix}$$

$$R:B$$

$$6) \quad 2A = \begin{pmatrix} -2 & 4 & 6 \\ 0 & -2 & 1 \end{pmatrix} \quad B = \begin{pmatrix} 0 & -2 & 1 \end{pmatrix} \quad 2A-B = \begin{pmatrix} -2 & 6 & 5 \end{pmatrix}$$

$$R:D$$

$$7) \quad A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix} \quad B^T = \begin{pmatrix} -1 & 2 \\ 3 & 0 \\ 2 & 1 \end{pmatrix} \quad A+B^T = \begin{pmatrix} 0 & 4 \\ 6 & 4 \\ 7 & 7 \end{pmatrix}$$

$$R:B$$

$$8) \quad A = \begin{pmatrix} 2 & -1 & 2 \\ x & 0 & -2 \\ 4 & 3 & 2 \end{pmatrix} \quad A^t = \begin{pmatrix} 2 & x & 4 \\ -1 & 0 & 3 \\ 2 & -2 & 2 \end{pmatrix} \quad \begin{array}{l} x=1 \quad 2y=6 \quad z=3 \\ y=2 \quad z=-3 \end{array}$$

$$x+y+z=-2$$

$$R:A$$

g)  $A_{ij} = i + j, \text{ se } i \neq j$   
 $A_{ij} = 1, \text{ se } i = j$

$B_{ij} = 0, \text{ se } i \neq j$   
 $B_{ij} = 2i - j, \text{ se } i = j$

$a_{11} = 1$      $A = \begin{bmatrix} 1 & 3 \\ 3 & 1 \\ 4 & 5 \end{bmatrix}$

$a_{22} = 3$

$a_{31} = 3$

$a_{12} = 1$

$a_{21} = 4$

$a_{32} = 5$

$b_{11} = 1$      $B = \begin{bmatrix} 1 & 0 \\ 0 & 2 \\ 0 & 0 \end{bmatrix}$

$b_{22} = 0$

$b_{31} = 0$

$b_{32} = 2$

$b_{31} = 0$

$b_{32} = 0$

$A \cdot B = \begin{bmatrix} 2 & 3 \\ 3 & 3 \\ 4 & 5 \end{bmatrix}$

$R: C$

10)  $3m = \begin{bmatrix} \frac{3x}{2} & 12 \\ 2 & 15 \end{bmatrix}$      $2n = \begin{bmatrix} \frac{2y}{3} & 4 \\ 3 & 8 \end{bmatrix}$      $p = \begin{bmatrix} 7 & 16 \\ 22 & 13 \end{bmatrix}$

$\frac{3x+2y}{2} = 7$

$\frac{2y+2(x+4)}{3} = 13$

$9y+4x = 9x-4y = 62-42$

$5y+5x = 20$

$\frac{9x+4y}{x} = \frac{42}{x}$

$\frac{9y+4(x+4)}{x} = \frac{78}{x}$

$5(y-x) = 20$

$y-x = \frac{20}{5}$

$9x+4y = 42$

$9y+4x+16 = 78$

$9y+4x = 62$

$y-x = 4$

$R: B$