

2.

a

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

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

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

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

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

$$4. A^T = \begin{bmatrix} 1 & 3 & 4 \\ 2 & 1 & 1 \\ 3 & 2 & 2 \end{bmatrix}$$

Q2

b

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

$$a = 5 \times 1 - 2 \times -2 = 5 - -4 = 9 \times 2 = 18$$

$$b = 2 \times 1 - -1 \times -2 = 2 - -2 = 4 \times 3 = 12$$

$$c = 2 \times 2 - 5 \times -1 = 4 - -5 = 9 \times -1 = -9$$

$$18 - 12 + -9 = -3$$

$$A = -3$$

Q2

C

$$2x + 3y - 1z = 3$$

$$2x + 5y - 2z = -3$$

$$-1x + 2y + 1z = 6$$

~~4/6~~

$$20x + 30y - 10z = 3$$

$$12x + 30y - 12z = -3$$

$$-15x + 30y + 15z = 6$$

$$20x - 10z = -3 + 30y$$

$$12x - 12z = -3 + 30y$$

$$-15x + 15z = 6 + 30y$$

Q3

1. $Z = -1 + 2i$ $W = 2 + 4i$

$2Z + W = -2 + 2 + 4i + 4i$

$2Z + W = 8i$

2. $ZW = (-1 + 2i) \times (2 + 4i)$
 $(4i + 2i) \times (2 - 1)$

$ZW = 6i \times 1$

~~3. $Z = -1 + 2i$~~

~~$W = 2 + 4i$~~

3. $\frac{Z}{W} = \frac{-1 + 2i}{2 + 4i}$

1a

$$\frac{x+8}{6} - \frac{x+3}{4} = \frac{3x+1}{4}$$

$$\frac{8}{6} - \frac{3}{4} = \frac{3x+1}{4}$$

$$\frac{x+16}{12} - \frac{2x+9}{12} = \frac{9x+3}{12}$$

$$x+16 - 2x+9 = 9x+3$$

$$-x + 25 = 9x + 3$$

$$-x + 22 = 9x$$

$$-x + 9x = 22$$

$$8x = 22$$

1b

$y = \text{Negative}$

$$2x + 3y = 3$$

$$5x - 3y = 18$$

$$7x = 21$$

$$x = 3$$

$$6 + 3y = 3$$

$$15 - 3y = 18$$

$$6 + -3 = 3$$

$$15 - -3 = 18$$

$$y = -1$$

1c

$$2x^2 + 4x = 6$$

~~(4x) + 4~~

$$(2 \times 1) + 4 = 6$$

$$2 + 4 = 6$$

$$x = 1$$