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QNO. 1 (a)  $x^3 + 6x^2 + 11x + 6$  by  $(x+3)$  by long Division

$$\begin{array}{r} x^2 + 3x + 2 \\ x+3 \overline{) x^3 + 6x^2 + 11x + 6} \\ \underline{+ x^3 + 3x^2} \phantom{+ 6} \\ 3x^2 + 11x + 6 \\ \underline{+ 3x^2 + 9x} \phantom{+ 6} \\ 2x + 6 \\ \underline{+ 2x + 6} \\ 0 \end{array}$$

$$\frac{x^3 + 6x^2 + 11x + 6}{x+3} = x^2 + 3x + 2 \rightarrow \text{Answer}$$

QNO.1 (b)  $6x^2 + 23x + 7$

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Solution:-

$$6x^2 + 23x + 7 = 0$$

$$6x^2 + 21x + 2x + 7 = 0 \quad \because 21x + 2x = 23x$$

$$3x(2x + 7) + 1(2x + 7) = 0$$

$$(2x + 7)(3x + 1) = 0$$

$$2x + 7 = 0, \quad 3x + 1 = 0$$

$$2x = -7, \quad 3x = -1$$

$$x = -\frac{7}{2}, \quad x = -\frac{1}{3} \rightarrow \text{Answer}$$

$$\text{QNo.1(c)} \quad \frac{4}{x+2} + \frac{7}{x^2+3x+2}$$

Solution:-

$$\frac{4}{x+2} + \frac{7}{x^2+3x+2}$$

first factorizing  $x^2+3x+2$

$$\Rightarrow x^2+3x+2$$

$$\Rightarrow x^2+x+2x+2$$

$$\Rightarrow x(x+1)+2(x+1)$$

$$\Rightarrow (x+1)(x+2)$$

So ~~the~~ the Expression becomes

$$\Rightarrow \frac{4}{x+2} + \frac{7}{(x+1)(x+2)}$$

$$\Rightarrow \frac{4(x+1) + 7}{(x+2)(x+1)}$$

$$\Rightarrow \frac{4x+4+7}{(x+2)(x+1)}$$

$$\Rightarrow \frac{4x+11}{(x+2)(x+1)}$$

$$\Rightarrow \frac{4x+11}{x^2+3x+2} \quad \because (x+2)(x+1) = x^2+3x+2$$

$$\boxed{\frac{4x+11}{x^2+3x+2}} \rightarrow \text{Answer}$$

Question No. 2 (a)

 $\frac{27}{2}$  into equivalent decimal

$$\frac{27}{2} = 27 \div 2 = 13.5$$

$$\begin{array}{r}
 13.5 \\
 2 \overline{) 27.0} \\
 \underline{2} \phantom{0} \\
 07 \\
 \underline{6} \\
 10 \\
 \underline{10} \\
 0
 \end{array}$$

$$\boxed{\frac{27}{2} = 13.5} \rightarrow \text{Answer}$$

And Now finding its percentage

Multiplying &amp; Dividing 13.5 by 100

$$\Rightarrow \frac{13.5}{100} \times 100$$

$$\Rightarrow 1350 \times \frac{1}{100}$$

$$\boxed{\Rightarrow 1350\%} \rightarrow \text{Answer}$$



Q No. 2 (b)

What percent of 450 is 18?

Solution:-

Assume the unknown value is "x"  
and 18 of 450 can be written as:

$$x = \frac{18}{450}$$

By multiplying both numerator and denominator by 100 we will get:

$$x = \frac{18}{450} \times \frac{100}{100}$$

$$x = \frac{1800}{450} \times \frac{1}{100}$$

$$x = \frac{180}{45} \times \frac{1}{100}$$

$$x = 4\% \rightarrow \text{Answer}$$

Q.No.2 (c)

$$S.P = 1500$$

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$$\text{Profit} = \frac{2}{3} C.P$$

Solution:-

Let the cost price of the item be Rs  $x$ .  
Then according to the given information,  
we have

$$\text{Gross profit} = \frac{2}{3} \times x = \frac{2}{3} x$$

Since the selling price of the item is Rs 1500,

So we get

$$x + \frac{2}{3} x = 1500$$

$$3 \times \frac{5}{3} x = 1500 \times 3$$

~~3x = 4500~~

$$\frac{8x}{8} = \frac{4500}{5}$$

$$x = 900$$

Therefore the gross profit is

$$\frac{2}{3} \times 900 = 600$$

$C.P = 900$ $G.P = 600.$	→ Answer
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$$\text{QNo 3 (a)} \quad A = \begin{bmatrix} 2 & 4 & 7 \\ 5 & 3 & 1 \end{bmatrix} \quad B = \begin{bmatrix} 3 & 9 \\ 2 & 4 \end{bmatrix}$$

Solution:-

a) AB

AB is not possible as the column of matrix A is not equal to the row of matrix B

b) BA

$$B \cdot A = \begin{bmatrix} 3 & 9 \\ 2 & 4 \end{bmatrix} \begin{bmatrix} 2 & 4 & 7 \\ 5 & 3 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} 3 \times 2 + 9 \times 5 & 3 \times 4 + 9 \times 3 & 3 \times 7 + 9 \times 1 \\ 2 \times 2 + 4 \times 5 & 2 \times 4 + 4 \times 3 & 2 \times 7 + 4 \times 1 \end{bmatrix}$$

$$= \begin{bmatrix} 6 + 45 & 12 + 27 & 21 + 9 \\ 4 + 20 & 8 + 12 & 14 + 4 \end{bmatrix}$$

$$BA = \begin{bmatrix} 51 & 39 & 30 \\ 24 & 20 & 18 \end{bmatrix} \rightarrow \text{ANSWER}$$



Q.No.3 (b)

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$$\begin{vmatrix} 2 & 2 & 0 \\ -2 & 1 & 2 \\ 2 & 1 & 0 \end{vmatrix}$$

Solution:- Expanding along column 3:

$$\begin{vmatrix} 2 & 2 & 0 \\ -2 & 1 & 2 \\ 2 & 1 & 0 \end{vmatrix} = 0 \cdot (-1)^{1+3} \begin{vmatrix} -2 & 1 \\ 2 & 1 \end{vmatrix} + (-1)^{2+3} \cdot 2 \begin{vmatrix} 2 & 2 \\ 2 & 1 \end{vmatrix} +$$

$$+ (-1)^{3+3} \cdot 0 \begin{vmatrix} -2 & 1 \\ 2 & 1 \end{vmatrix}$$

$$= 0 \begin{vmatrix} -2 & 1 \\ 2 & 1 \end{vmatrix} - 2 \begin{vmatrix} 2 & 2 \\ 2 & 1 \end{vmatrix} + 0 \begin{vmatrix} -2 & 1 \\ 2 & 1 \end{vmatrix}$$

$$= -2 \begin{vmatrix} 2 & 2 \\ 2 & 1 \end{vmatrix}$$

$$\begin{vmatrix} 2 & 2 \\ 2 & 1 \end{vmatrix} = (2 \times 1) - (2 \times 2) = 2 - 4 = -2$$

$$\Rightarrow -2(-2)$$

$$= 4$$

$$\begin{vmatrix} 2 & 2 & 0 \\ -2 & 1 & 2 \\ 2 & 1 & 0 \end{vmatrix} = 4$$

Q.No.3 (c)

$$2x + y + z = 5 \quad \text{--- (i)}$$

$$3x - 2y - z = 11 \quad \text{--- (ii)}$$

$$3x + y + 2z = 11 \quad \text{--- (iii)}$$

Multiply first equation by ~~2~~  $-\frac{3}{2}$  and add the result to the second equation.

$$\left(-\frac{3}{2}\right) \times (2x + y + z) = 5 \left(-\frac{3}{2}\right)$$

$$-3x - \frac{3}{2}y - \frac{3}{2}z = -\frac{15}{2} \quad \text{--- (iv)}$$

Adding (iv) to (ii).

$$3x - 2y - z = 11$$

$$-3x - \frac{3}{2}y - \frac{3}{2}z = -\frac{15}{2}$$


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$$-\frac{7}{2}y - \frac{5}{2}z = \frac{7}{2} \quad \text{--- (v)}$$

Now adding (iv) to (iii)

$$3x + y + 2z = 11$$

$$-3x - \frac{3}{2}y - \frac{3}{2}z = -\frac{15}{2}$$


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$$-\frac{1}{2}y + \frac{1}{2}z = \frac{7}{2} \quad \text{--- (vi)}$$

(10)  
Now multiplying (iv) by 2

$$2\left(-\frac{7y}{2} - \frac{5z}{2}\right) = (7/2) \cdot 2$$

$$-7y - 5z = 7 \quad \text{--- (vii)}$$

and multiplying (vi) by 2

$$2\left(-\frac{1}{2}y + \frac{1}{2}z\right) = (7/2) \cdot 2$$

$$-y + z = 7 \quad \text{--- (viii)}$$

~~Multiply (viii) by 7~~

~~$7(-y + z) = 7(7)$~~

multiplying (viii) by -7

$$-7(-y + z) = 7(-7)$$

$$7y - 7z = -49 \quad \text{(ix)}$$

Now add (ix) with (vii)

$$-7y - 5z = 7$$

$$7y - 7z = -49$$

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$$-12z = -42$$

$$z = \frac{-42}{-12} = 7/2$$

(11)  
Now solve for  $y$

$$-7y - 5z = 7$$

$$-7y - (5 \cdot \frac{7}{2}) = 7$$

$$y = -\frac{7}{2}$$

Now for  $x$  putting the values in (1)

$$2x + (-\frac{7}{2}) + \frac{7}{2} = 5$$

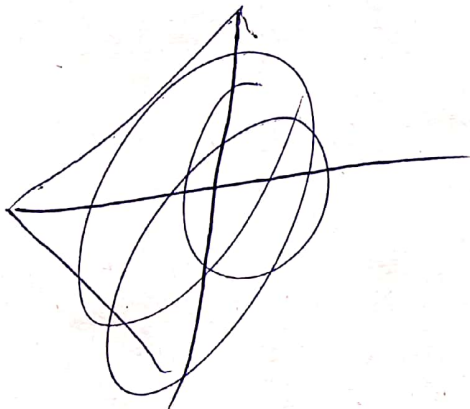
$$2x = 5$$

$$x = \frac{5}{2}$$

The solutions are

$$x = \frac{5}{2}, y = -\frac{7}{2}, z = \frac{7}{2}$$

→ Answer





(2)

Graph :

