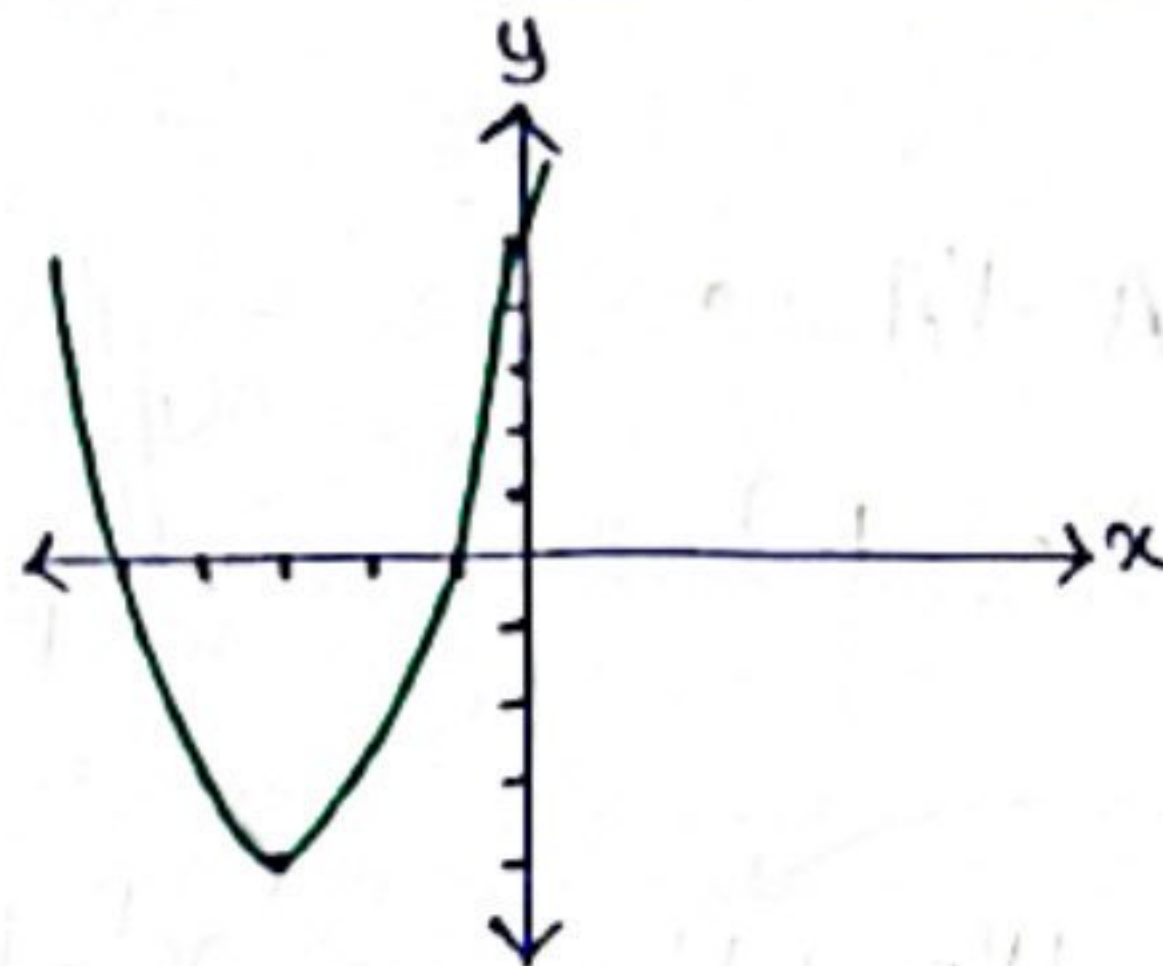


الف) $y = x^2 + 4x + 5 \rightarrow x \geq 0$
Min U

ext $\begin{cases} x = \frac{-b}{2a} = \frac{-4}{2} = -2 \\ y = 4 + (-16) + 5 = -7 \end{cases}$

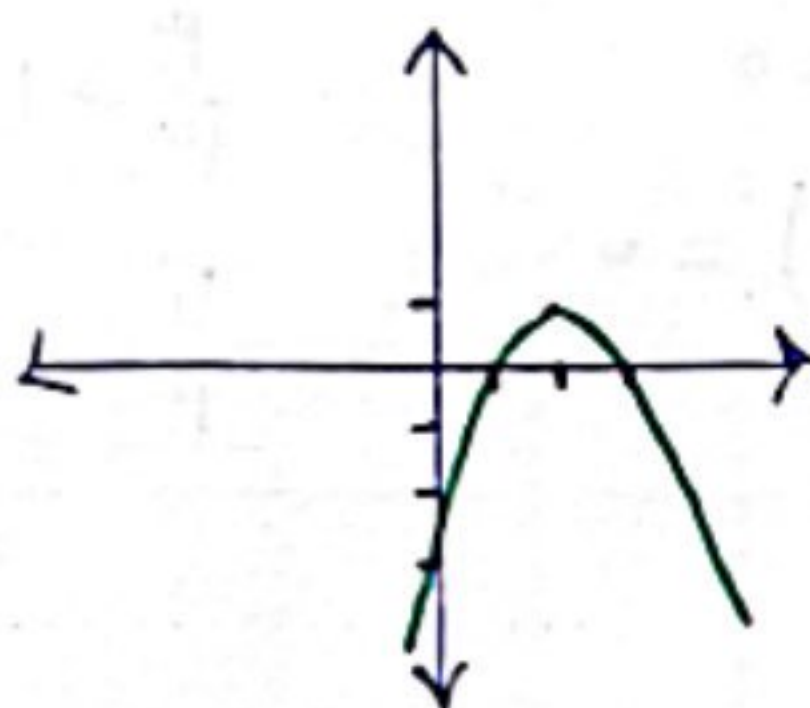
ب)



۲

الف) $y = -x^2 + 4x - 3 \rightarrow x \leq 0$
Max A

ext $\begin{cases} x = \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ y = -4 + 16 - 3 = 9 \end{cases}$



ب) $-x^2 + 4x - 3 = 0$

$-(x-1)(x-3) = 0$

$\begin{matrix} \downarrow & \downarrow \\ x=1 & x=3 \\ | & | \\ 1 & 3 \end{matrix}$

۲

$\Delta = b^2 - 4ac = 4 - 12a$

الف) $\Delta \geq 0 \rightarrow 4 - 12a \geq 0 \Rightarrow a \leq \frac{1}{3}$

ب) $\Delta = 0 \rightarrow 4 - 12a = 0 \Rightarrow a = \frac{1}{3}$

ج) $\Delta < 0 \rightarrow 4 - 12a < 0 \Rightarrow a > \frac{1}{3}$

$\Rightarrow \Delta \geq 0 \rightarrow a \leq \frac{1}{3}$

۳

الف) $x^2 - 2x - 1 = 0 \xrightarrow{+1} x^2 - 2x + 1 = 1$

$(x-1)^2 = 1$

$x-1 = \pm\sqrt{1} \rightarrow \begin{cases} x=1+\sqrt{1} \\ x=1-\sqrt{1} \end{cases}$

ب) $x^2 - x = 1$

$\xrightarrow{\text{اضافه } \frac{1}{4}} x^2 - x + \frac{1}{4} - \frac{1}{4} = 1 \rightarrow (x - \frac{1}{2})^2 - \frac{1}{4} = 1 \rightarrow x - \frac{1}{2} = \pm\sqrt{\frac{5}{4}} \rightarrow \begin{cases} x = \frac{1+\sqrt{5}}{2} \\ x = \frac{1-\sqrt{5}}{2} \end{cases}$

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الف) $\Delta = 4 + 4 = 8$

$\Rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{1 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$

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ب) $\Delta = b^2 - 4ac = 1 - 4(1)(-4) = 1 + 16 = 17$

$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{17}}{2}$

۵

$$\text{الف) } x^2 - 11x + 17 = 0$$

$$(x-4)(x-7) = 0 \Rightarrow \begin{cases} x=4 \\ x=7 \end{cases}$$

$$\text{ب) } x^2 + 13x - 17 = 0$$

$$(x+7)(x-4) = 0 \Rightarrow \begin{cases} x=-7 \\ x=4 \end{cases}$$

$$\text{الف) } \omega x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 7\omega = 0$$

$$(x-7)(x-\omega) = 0 \Rightarrow \begin{cases} x=7 \\ x=\omega=1 \end{cases}$$

$$\text{ب) } 13x^2 - 10x + 7 = 0 \Rightarrow x^2 - 10x + 17 = 0$$

$$(x-13)(x-7) = 0 \Rightarrow \begin{cases} \frac{13}{13}=1 \\ \frac{7}{13} \end{cases}$$

$$\text{الف) } a+b+c=0$$

$$1+(-\omega)+1=0 \Rightarrow \begin{cases} x=1 \\ x=\frac{c}{a}=\frac{1}{1} \end{cases}$$

$$\text{ب) } a+c=b$$

$$1+12\omega \Rightarrow \begin{cases} x=-1 \\ x=\frac{-c}{a}=\frac{-1}{1} \end{cases}$$

$$\text{ج) } \Delta = b^2 - 4ac \Rightarrow 12\omega - 4(1 \times 1) = 12\omega - 4$$

$$\Rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{\omega \pm \sqrt{12\omega - 4}}{2}$$

$$\text{د) } \Delta = b^2 - 4ac \Rightarrow 129 - 4(4 \times 9) = -96$$

چون $\Delta < 0$ پس معادله جواب ندارد.

$$\text{الف) } S = \frac{-b}{a} \quad P = \frac{c}{a}$$

$$S^2 = \left(\frac{13}{1}\right)^2 = 169$$

$$12P = 12 \times \frac{-1}{1} = -12$$

$$\Rightarrow S^2 - 12P = 169 - (-12) = 181$$

$$\text{ب) } S^3 = \left(\frac{13}{1}\right)^3 = 2197$$

$$13P = 13 \times \frac{1}{1} \times \frac{-1}{1} = -13$$

$$\Rightarrow S^3 - 13P = 2197 - (-13) = 2210$$

الف)

$$\begin{pmatrix} 7 \\ \omega \end{pmatrix} = \begin{pmatrix} 7 \\ 1 \end{pmatrix} = \frac{7 \times 1}{1 \times 1} = 7$$

$$\begin{pmatrix} 9 \\ 1 \end{pmatrix} = \frac{9 \times 1}{1 \times 1} = 9$$

$$\Rightarrow 7 + 9 = 16$$

$$\text{ب) } \begin{pmatrix} 9 \\ 1 \end{pmatrix} = \frac{9 \times 1}{1 \times 1} = 9$$

$$\begin{pmatrix} 1 \\ 1 \end{pmatrix} = \frac{1 \times 1}{1 \times 1} = 1$$

$$\Rightarrow 9 - 1 = 8$$

4

7

1

9

10