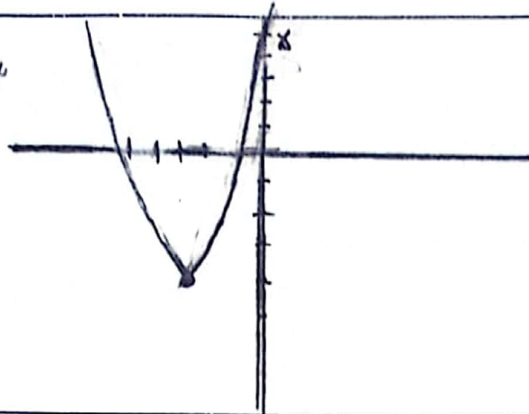
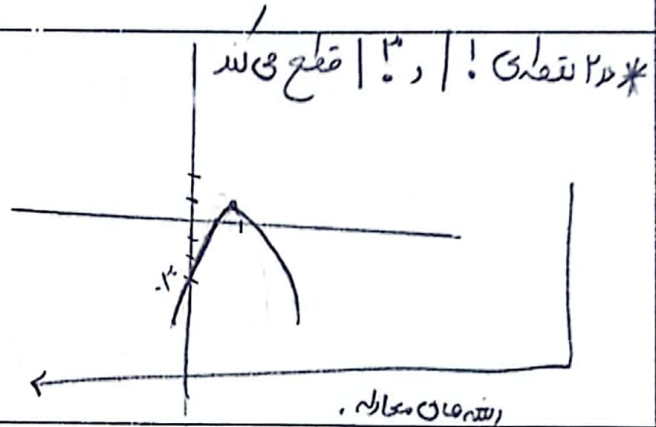


Min $\left| \begin{array}{l} \frac{-b}{2a} = \frac{-4}{2} = -2 \\ -4 \end{array} \right.$



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Max $\left| \begin{array}{l} \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ 1 \end{array} \right.$



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$-(m^2 - 4m + 4) = 0$

$-(m-1)(m-3) = 0 \Rightarrow m=1 \text{ or } m=3$

$\Delta > 0 \Rightarrow b^2 - 4ac > 0 \Rightarrow 4 - 4c > 0 \Rightarrow \frac{4}{4} > c \Rightarrow$

$\Delta = 0 \Rightarrow b^2 - 4ac = 0 \Rightarrow 4 - 4c = 0 \Rightarrow 4c = 4 \Rightarrow c = \frac{4}{4}$

$\Delta < 0 \Rightarrow b^2 - 4ac < 0 \Rightarrow 4 - 4c < 0 \Rightarrow \frac{4}{4} < c \Rightarrow$

الف) $a < \frac{4}{4}$ (مثلاً -۲)

ب) $a = \frac{4}{4}$

ج) $a > \frac{4}{4}$

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$\Delta > 0 \Rightarrow b^2 - 4ac > 0 \Rightarrow 4 - 4c > 0 \Rightarrow \frac{4}{4} > c$

د) $a < \frac{4}{4}$

الف) $m^2 - 4m + 4 = 2 \Rightarrow (m-1)^2 = 2 \Rightarrow m = \pm\sqrt{2} + 1$

ب) $m^2 - m + \frac{1}{4} = \frac{5}{4} \Rightarrow (m - \frac{1}{4})^2 = \frac{5}{4} \Rightarrow m = \pm \frac{\sqrt{5}}{2} + \frac{1}{4}$

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الف) $\Delta = b^2 - 4ac = 4 + 4 = 8$

$m = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-2 \pm \sqrt{8}}{2} \Rightarrow 1 + \sqrt{2} \text{ or } 1 - \sqrt{2}$

ب) $\Delta = b^2 - 4ac = 1 + 16 = 17$

$m = \frac{-1 \pm \sqrt{17}}{2} \Rightarrow \frac{-1 + \sqrt{17}}{2} \text{ or } \frac{-1 - \sqrt{17}}{2}$

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$$\text{الف) } (m-4)(m-1)=0 \quad \begin{cases} \rightarrow m=4 \\ \rightarrow m=1 \end{cases}$$

$$\text{ب) } (m+1)(m-4)=0 \quad \begin{cases} \rightarrow m=-1 \\ \rightarrow m=4 \end{cases}$$

$$\text{الف) } m^2 - 12m + 16 = 0 \Rightarrow (m-4)(m-1)=0 \quad \begin{cases} \rightarrow m=4 \\ \rightarrow m=1 \end{cases} \quad \begin{cases} m=1 \\ m=\frac{1}{4} \end{cases}$$

$$\text{ب) } m^2 - 12m + 16 = 0 \Rightarrow (m-4)(m-1)=0 \quad \begin{cases} \rightarrow m=4 \\ \rightarrow m=1 \end{cases} \quad \begin{cases} m=1 \\ m=\frac{1}{4} \end{cases}$$

$$\text{الف) } 1+4-5=0 \quad \begin{cases} \rightarrow m=1 \\ \rightarrow m=\frac{1}{4} \end{cases}$$

$$\text{ب) } 1+4=5 \Rightarrow \begin{cases} \rightarrow m=-1 \\ \rightarrow m=-\frac{1}{4} \end{cases}$$

$$\Delta = b^2 - 4ac = 16 - 4 \times 1 \times 1 = 12 \quad \begin{cases} m = \frac{1 \pm \sqrt{12}}{2} = \frac{1 \pm 2\sqrt{3}}{2} = \frac{1 \pm \sqrt{3}}{1} \end{cases}$$

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

$$\text{الف) } (1+4)^2 - 1(-1) = 25 + 1 = 26$$

$$\text{ب) } (1+4)^2 - 1(1+4)(-1) = 25 + 10 = 35$$

$$\text{الف) } \left(\frac{1}{2}\right) + \left(\frac{1}{2}\right) = \frac{1 \times 1}{2} + \frac{1 \times 1}{2} = 1 + 1 = 2$$

$$\text{ب) } \left(\frac{1}{2}\right) - \left(\frac{1}{2}\right) = \frac{1 \times 1}{2 \times 2} - \frac{1 \times 1}{2} = \frac{1}{4} - \frac{1}{2} = -\frac{1}{4}$$