

$$x = -\frac{b}{2a} = -\frac{-6}{2} = 3$$

$$y = 9 - 18 + 5 = -4$$

Min

$$y = x^2 + 6x + 5$$

(۲)

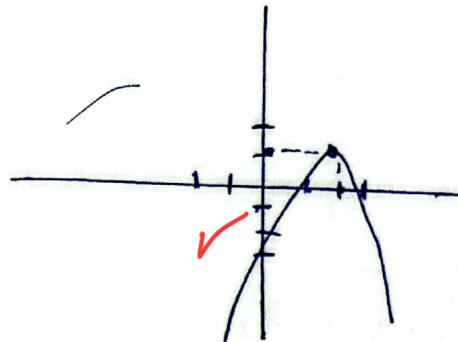
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$$-x^2 + 4x - 3 = 0$$

$$0 = x^2 - 4x + 3$$

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

پس $x = 1$ ✓
 $x = 3$ ✓



$$y = -x^2 + 4x - 3$$

$$-\frac{b}{2a} = -\frac{-4}{-2} = 2 = x$$

$$-4 + 12 - 3 = 5 = y$$

(۲)

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الف) $a < \frac{9}{\lambda} \leftarrow 9 - \lambda a > 0$ $\Delta = 9 - \lambda a$ $\Delta > 0$ $\Delta = b^2 - 4ac$ (الف) $\Delta > 0$ شرط دوریه

$$a = \frac{9}{\lambda} \leftarrow 9 - \lambda a = 0$$

$$a > \frac{9}{\lambda} \leftarrow 9 - \lambda a < 0$$

ب) شرط یک ریشه مضاعف $\Delta = 0$
ج) بدون ریشه حقیقی $\Delta < 0$

د) $x(2x-3) = 0 \rightarrow 2x^2 - 3x = 0 \leftarrow a = 0$ $2(0)^2 - 3(0) + a = 0$
برای این معادله ریشه داشته باشد $a \leq \frac{9}{\lambda}$

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الف) $x^2 - 2x - 1 = 0 \rightarrow x^2 - 2x + 1 = 2 = (x-1)^2 = 2 \rightarrow x = 1 \pm \sqrt{2}$

$1 + \sqrt{2}$

$1 - \sqrt{2}$

(۱)

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ب) $x^2 - x - 1 = 0 \rightarrow (x^2 - x + \frac{1}{4}) - \frac{1}{4} = 1 \rightarrow (x - \frac{1}{2})^2 = \frac{5}{4}$

$x = \frac{\sqrt{5}}{2} + \frac{1}{2}$

$x = -\frac{\sqrt{5}}{2} + \frac{1}{2}$

الف) $x^2 - 2x - 1 \rightarrow \Delta = b^2 - 4ac$ $\frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \Delta = 4 + 4 = 8$ $\frac{2 \pm \sqrt{8}}{2}$

$x(1 + \sqrt{2})$

$x(1 - \sqrt{2})$

$\frac{-1 + \sqrt{14}}{2}$

$\frac{-1 - \sqrt{14}}{2}$

ب) $x^2 + x - 4 \rightarrow \Delta = 1 + 16 = 17$ $\frac{-1 \pm \sqrt{17}}{2}$

(۲)

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الف) $x^2 - 11x + 21 = 0 \rightarrow (x-4)(x-7) = 0$ $\begin{cases} x=4 \\ x=7 \end{cases}$ ✓

ب) $x^2 + 3x - 21 = 0 \rightarrow (x-4)(x+7) = 0$ $\begin{cases} x=4 \\ x=-7 \end{cases}$ ✓

(2)

الف) $5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 35$
 $(x-7)(x-5)$ $\begin{cases} 7 \rightarrow \div 5 & x = \frac{7}{5} \\ 5 \rightarrow \div 5 & x = 1 \end{cases}$

ب) $3x^2 - 10x + 7 = 0 \rightarrow x^2 - 10x + 21$
 $(x-3)(x-7)$ $\begin{cases} 3 \rightarrow \div 3 & x = 1 \\ 7 \rightarrow \div 3 & x = \frac{7}{3} \end{cases}$

(1)

الف) $2x^2 - 5x + 3 = 0$ $\Delta = 25 - 24 = 1$ $\frac{5 \pm 1}{4}$ $\begin{cases} x = \frac{3}{2} \\ x = 1 \end{cases}$ ✓

ب) $2x^2 + 5x + 3 = 0$ $\Delta = 25 - 24 = 1$ $\frac{-5 \pm 1}{4}$ $\begin{cases} x = 1 \\ x = -\frac{3}{2} \end{cases}$ ✓

ج) $2x^2 - 5x + 1 = 0$ $\Delta = 25 - 4 = 21$ $\frac{5 \pm \sqrt{21}}{4}$ $\begin{cases} x = \frac{5 + \sqrt{21}}{4} \\ x = \frac{5 - \sqrt{21}}{4} \end{cases}$ ✓

د) $4x^2 + 7x + 9 = 0$ $\Delta = 49 - 144 = -95$ $\Delta < 0$ $\begin{cases} \text{ریشه ندارد} \end{cases}$ ✓

$S^2 - 2P \rightarrow 9 + 4 = 13$ ✓

$S^3 - 3SP \rightarrow 27 + 18 = 45$ ✓

ضرب ریشه $= \frac{c}{a} = -2$
 جمع ریشه $= \frac{-b}{a} = 3$

$x^2 - 3x - 2 = 0$

(1, 2)

الف) $\binom{V}{4} + \binom{9}{2} = \binom{14}{V}$ $\binom{V}{4} = \frac{V!}{(V-4)! \times 4!} = \frac{V \times 4}{2} = 2V$

ب) $\binom{9}{3} - \binom{1}{2} = \binom{8}{1}$

$\binom{9}{2} = \frac{9!}{V! \times 2!} = \frac{9 \times 1}{2} = 4.5$

$\binom{21}{4} = 546$

(0)

$\binom{9}{4} = \frac{9!}{3! \times 4!} = \frac{9 \times 1 \times 2 \times 3}{4! \times 4!} = 1.5$

$\binom{1}{2} = \frac{1!}{V! \times 4!} = \frac{1 \times V}{2} = 2V$

$1.5 - 21 = 54$