

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس نام و نام خانوادگی

$$\text{الف) } x^2 - 6x + 8 = 0 \xrightarrow{+1} x^2 - 6x + 9 = 1 \rightarrow (x-3)^2 = 1 \rightarrow \begin{cases} x-3 = 1 \rightarrow x = 4 \\ x-3 = -1 \rightarrow x = 2 \end{cases}$$

$$\text{ب) } x^2 + 8x + 7 = 0 \xrightarrow{+9} x^2 + 8x + 16 = 9 \rightarrow (x+4)^2 = 9 \rightarrow \begin{cases} x+4 = 3 \rightarrow x = -1 \\ x+4 = -3 \rightarrow x = -7 \end{cases}$$

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$$\text{الف) } x^2 - 5x + 6 = 0 \rightarrow (x-2)(x-3) = 0 \rightarrow \begin{cases} x = 2 \\ x = 3 \end{cases}$$

9

$$\text{ب) } x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) = 0 \rightarrow \begin{cases} x = 7 \\ x = -2 \end{cases}$$

2

$$\text{الف) } x^2 - 2x - 5 = 0$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow x = \frac{2 \pm \sqrt{4 + 20}}{2} = \frac{2 \pm \sqrt{24}}{2} \rightarrow \begin{cases} x = \frac{2 + \sqrt{24}}{2} \\ x = \frac{2 - \sqrt{24}}{2} \end{cases}$$

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

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow x = \frac{4 \pm \sqrt{16 - 2}}{4} = 1 \pm \frac{\sqrt{14}}{2} \rightarrow \begin{cases} x = 1 + \frac{\sqrt{14}}{2} \\ x = 1 - \frac{\sqrt{14}}{2} \end{cases}$$

$$\text{الف) } x^2 - 3x + 1 = 0 \rightarrow a + b + c = 0 \rightarrow \begin{cases} x = 1 \\ x = \frac{c}{a} = 1 \end{cases}$$

9

$$\text{ب) } 4x^2 + x - 3 = 0 \rightarrow a + c = b \rightarrow \begin{cases} x = -1 \\ x = \frac{-c}{a} = \frac{3}{4} \end{cases}$$

3

$$\text{الف) } 5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 14 = 0 \rightarrow (x-7)(x-2) = 0 \rightarrow \begin{cases} x = \frac{7}{5} \\ x = 1 \end{cases}$$

9

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

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در ریشه‌ی حقیقی $\Delta > 0 \rightarrow \Delta = 15 - 12 = 3 \rightarrow \Delta > 0$ (الف) $3x^2 + 5x - 1$ $\rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 25 - 12 = 13 \rightarrow \Delta > 0$

فاقد ریشه‌ی حقیقی $\Delta < 0 \rightarrow \Delta = 1 - 16 = -15 \rightarrow \Delta < 0$ (ب) $2x^2 - x + 2$ $\rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 1 - 16 = -15 \rightarrow \Delta < 0$

دو ریشه‌ی مساوی یا یک ریشه مضاعف $\Delta = 0 \rightarrow \Delta = 14 - 14 = 0 \rightarrow \Delta = 0$ (ج) $2x^2 - 4x + 2$ $\rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 16 - 16 = 0 \rightarrow \Delta = 0$

فاقد ریشه‌ی حقیقی $\Delta < 0 \rightarrow \Delta = 1 - 8 = -7 \rightarrow \Delta < 0$ (د) $2x^2 - x + 1$ $\rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 1 - 8 = -7 \rightarrow \Delta < 0$

$b^2 - 4ac > 0 \rightarrow 9 - 4c > 0 \rightarrow 4c < 9 \rightarrow c < \frac{9}{4} \xrightarrow{a=c} a < \frac{9}{4}$ (الف) $\Delta > 0$

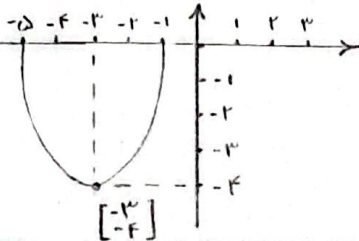
$b^2 - 4ac = 0 \rightarrow 9 - 4c = 0 \rightarrow 4c = 9 \rightarrow c = \frac{9}{4} \xrightarrow{a=c} a = \frac{9}{4}$ (ب) $\Delta = 0$

$b^2 - 4ac < 0 \rightarrow 9 - 4c < 0 \rightarrow 4c > 9 \rightarrow c > \frac{9}{4} \xrightarrow{a=c} a > \frac{9}{4}$ (ج) $\Delta < 0$

$b^2 - 4ac \geq 0 \rightarrow 9 - 4c \geq 0 \rightarrow 4c \leq 9 \rightarrow c \leq \frac{9}{4} \xrightarrow{a=c} a \leq \frac{9}{4}$ (د) $\Delta \geq 0$

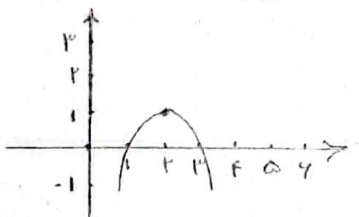
$y = x^2 + 4x + 5$ می‌بینیم داریم $a > 0 \rightarrow$ (الف)

$x = \frac{-b}{2a} \rightarrow x = \frac{-4}{2} = -2$ $y = \frac{-\Delta}{4a} \rightarrow y = \frac{-(16 - 20)}{4} = 1$ $\vec{x} = \begin{bmatrix} -2 \\ 1 \end{bmatrix}$



$y = -x^2 + 4x - 3$ می‌بینیم داریم $a < 0 \rightarrow$ (الف)

$x = \frac{-b}{2a} \rightarrow x = \frac{-4}{-2} = 2$ $y = \frac{-\Delta}{4a} = \frac{-(16 - 12)}{-4} = 1$ $\vec{x} = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$



(ب) ریشه‌ی محادله: $a + b + c = 0 \rightarrow x = 1$

$x = \frac{c}{a} = 3$

بنابراین نقاط برخورد $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$ و $\begin{bmatrix} 3 \\ 0 \end{bmatrix}$ است

$S = \frac{-b}{a} \rightarrow S = \frac{-b}{a} = 2$

$P = \frac{c}{a} \rightarrow P = \frac{c}{a} = -2$

$(1, 5)$

(الف) $S^2 - 2P = 4 + 4 = 8$

$\rightarrow S - 3P = 4 + 6 = 10$

$S^3 - 3SP = 8 - 3(-2)(4) = 20$