نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ...۱... کلاس .....

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$y = x^2 + 4x + 0$

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

جایگذاری $\rightarrow y = \underbrace{(-2)^2}_{4} + \underbrace{4\times(-2)}_{-8} + 0 = -4$

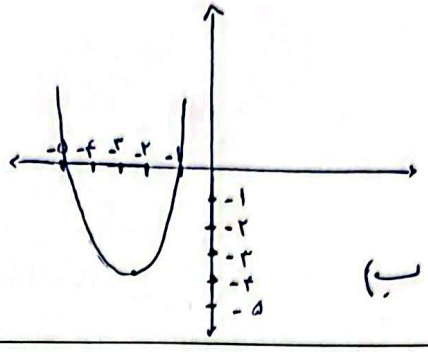
الف) $\begin{vmatrix} -2 \\ -4 \end{vmatrix}$

نوع نقطه: Min

$y=0 \rightarrow x^2 + 4x + 0 = 0 \rightarrow x=-4,\ x=0$

$a+c=b \rightarrow x=-1,\ x=-\frac{c}{a}$

ب)



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

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

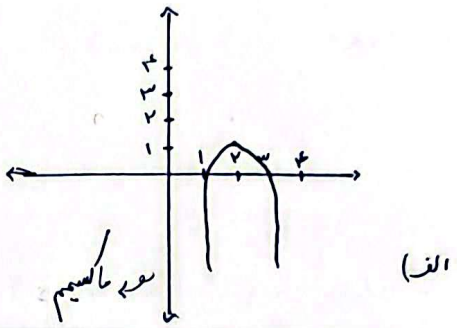
جایگذاری $\rightarrow -4 + 8 - 3 = 1$

الف) $\begin{vmatrix} 2 \\ 1 \end{vmatrix}$

ب) نمودار را در نقاط: $x=\frac{1}{2}$ و $x=\frac{3}{2}$ روی محور xها قطع می‌کند.

$y=0 \rightarrow -x^2 + 4x - 3 = 0 \rightarrow x=1,\ x=\frac{c}{a}$

$a+b+c=0$



الف) نمودار ما تقسیم

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$2x^2 - 3x + a = 0 \quad , \quad \Delta = b^2 - 4ac$

الف) $\Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow 9 - 4(2)(a) = 9 - 8a > 0 \rightarrow 9 > 8a \rightarrow a = [1, -\infty)$

ب) $\Delta = 0 \rightarrow b^2 - 4ac = 0 \rightarrow 9 - 4(2)(a) = 0 \rightarrow 9 - 8a = 0 \rightarrow 9 = 8a \rightarrow a = \frac{9}{8}$

ج) $\Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow 9 - 4(2)(a) = 9 - 8a < 0 \rightarrow 9 < 8a \rightarrow a = (1, +\infty)$

د) $\Delta \geq 0 \rightarrow b^2 - 4ac \geq 0 \rightarrow 9 - 4(2)(a) = 9 - 8a \geq 0 \rightarrow 9 \geq 8a \rightarrow a \leq \frac{9}{8}$

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

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

$(x-a)^2 = x^2 - \underbrace{2\times x \times a}_{\rightarrow 2\times x\times a = x \rightarrow a = \frac{1}{2} \rightarrow (\frac{1}{2})^2 = \frac{1}{4}} + a^2$

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الف) $x^2 - 2x - 1 = 0 \quad x = \frac{-b \pm \sqrt{\Delta}}{2a}, \ \Delta = b^2 - 4ac$

$\Delta > 0 \rightarrow x = \frac{2 \pm \sqrt{4+4}}{2} = \frac{2 \pm 2\sqrt{2}}{2} \rightarrow \frac{2}{2} \pm \frac{2\sqrt{2}}{2} \rightarrow \begin{cases} x = 1+\sqrt{2} \\ x = 1-\sqrt{2} \end{cases}$

ب) $x^2 + x - 4 = 0$

$\Delta > 0 \rightarrow x = \frac{-1 \pm \sqrt{1+16}}{2} = \frac{-1 \pm \sqrt{17}}{2} \rightarrow \begin{cases} x = \frac{-1+\sqrt{17}}{2} \\ x = \frac{-1-\sqrt{17}}{2} \end{cases}$

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الف) $x^2 - 11x + 28 = 0 \rightarrow (x-4)(x-7) = 0 \rightarrow \begin{cases} x = 4 \\ x = 7 \end{cases}$

(ضرب ۲۸، جمع ۱۱)

ب) $x^2 + 3x - 28 = 0 \rightarrow (x+7)(x-4) = 0 \rightarrow \begin{cases} x = 4 \\ x = -7 \end{cases}$

(ضرب ۲۸، جمع ۳)

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

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

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الف) $2x^2 - 5x + 3 = 0 \rightarrow x^2 - 5x + 6 = 0 \rightarrow (x-2)(x-3) = 0 \rightarrow \begin{cases} x = \frac{2}{2} = 1 \\ x = \frac{3}{2} = \frac{3}{2} \end{cases}$

ب) $2x^2 + 5x + 3 = 0 \rightarrow x^2 + 5x + 6 = 0 \rightarrow (x+2)(x+3) = 0 \rightarrow \begin{cases} x = \frac{-2}{2} = -1 \\ x = \frac{-3}{2} = -\frac{3}{2} \end{cases}$

ج) $2x^2 - 5x + 1 = 0 \rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \frac{5 \pm \sqrt{25 - 8}}{4} \rightarrow \begin{cases} x = \frac{5 - \sqrt{17}}{4} \\ x = \frac{5 + \sqrt{17}}{4} \end{cases}$

د) $4x^2 + 7x + 9 = 0 \rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \frac{-7 \pm \sqrt{49 - 144}}{8} \rightarrow \Delta < 0 \rightarrow$ معادله ریشه حقیقی ندارد

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$x^2 - 3x - 2 = 0 \rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{3 \pm \sqrt{9 + 8}}{2} \Rightarrow \begin{cases} x = \frac{3 + \sqrt{17}}{2} \\ x = \frac{3 - \sqrt{17}}{2} \end{cases}$

$S = \frac{3 + \sqrt{17}}{2} + \frac{3 - \sqrt{17}}{2} = \frac{3 + \sqrt{17} + 3 - \sqrt{17}}{2} = \frac{6}{2} = 3$

$P = \left(\frac{3 + \sqrt{17}}{2}\right)\left(\frac{3 - \sqrt{17}}{2}\right) = \frac{(3)^2 - (\sqrt{17})^2}{(2)^2} = \frac{9 - 17}{4} = \frac{-8}{4} = -2$

الف) $S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = \boxed{13}$ ✓

ب) $S^3 - 3SP = 3^3 - 3(3)(-2) = 9 + 18 = \boxed{27}$ ✓

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الف) $\begin{pmatrix} 7 \\ 5 \end{pmatrix} + \begin{pmatrix} 9 \\ 2 \end{pmatrix} = \begin{pmatrix} 16 \\ 7 \end{pmatrix}$

ب) $\begin{pmatrix} 9 \\ 3 \end{pmatrix} - \begin{pmatrix} 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$