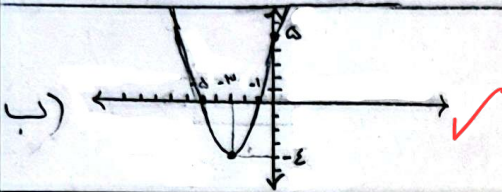
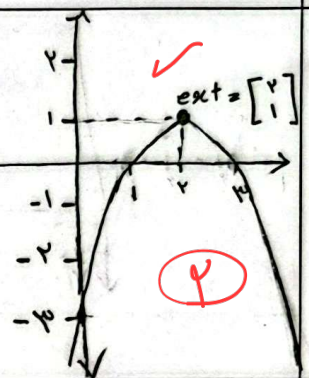


الف) $y = x^2 + 4x + a$ معادله $\Rightarrow$ $\Delta = 16 - 4a$ $\Rightarrow$ $a > 0 \Rightarrow$ نوع (الف) $\Rightarrow$ $\Delta > 0$ $\Rightarrow$ $a < 4$ $\Rightarrow$ $\Delta = 0$ $\Rightarrow$ $a = 4$ $\Rightarrow$ $\Delta < 0$ $\Rightarrow$ $a > 4$



الف) $y = -x^2 + 4x - 3$ معادله

الف) $\Delta = 16 - 4(-3) = 28$ $\Rightarrow$ $\Delta > 0$ $\Rightarrow$ $a < 4$ $\Rightarrow$ $\Delta = 0$ $\Rightarrow$ $a = 4$ $\Rightarrow$ $\Delta < 0$ $\Rightarrow$ $a > 4$



ب) $-x^2 + 4x - 3 = 0$ $\Rightarrow$ $x^2 - 4x + 3 = 0$ $\Rightarrow$ $(x-1)(x-3) = 0$ $\Rightarrow$ $x = 1$ or $x = 3$

الف) $\Delta > 0$ $\Rightarrow$ $a < 4$ $\Rightarrow$ $\Delta = 0$ $\Rightarrow$ $a = 4$ $\Rightarrow$ $\Delta < 0$ $\Rightarrow$ $a > 4$

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

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

الف) $x^2 - 2x - 1 = 0$ $\Delta = 4 + 4 = 8$ $\Rightarrow$ $x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$

ب) $x^2 + x - 4 = 0$ $\Delta = 1 + 16 = 17$ $\Rightarrow$ $x = \frac{-1 \pm \sqrt{17}}{2}$

$$\text{الف) } x^2 - 11x + 28 = 0$$

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

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$$\text{ب) } x^2 + 3x - 28 = 0$$

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

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

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

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$$\text{الف) } 2x^2 - 5x + 3 = 0 \quad a+b+c=0 \quad 2+(-5)+3=0 \Rightarrow \begin{cases} x=1 \\ x=\frac{3}{2} \end{cases}$$

جمع ضرایب

$$\text{ب) } 2x^2 + 5x + 3 = 0 \quad a+c=b \quad 2+3=5 \Rightarrow \begin{cases} x=1 \\ x=-\frac{3}{2} \end{cases}$$

جمع ضرایب

$$\text{ج) } 2x^2 - 5x + 1 = 0 \quad \Delta = (-5)^2 - 4(2)(1) = 25 - 8 = 17 \quad x = \frac{5 \pm \sqrt{17}}{4} \Rightarrow \begin{cases} x=\frac{5+\sqrt{17}}{4} \\ x=\frac{5-\sqrt{17}}{4} \end{cases}$$

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$$\text{د) } 4x^2 + 7x + 9 = 0 \quad \Delta = 7^2 - 4(4)(9) = 49 - 144 = -95$$

دلتا

دلتا منفی است پس معادله جوابی در مجموعه اعداد حقیقی ندارد.

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

$$S = \frac{-b}{a} \quad \Delta > 0$$

$$P = \frac{c}{a}$$

$$S = 3$$

$$P = -2$$

$$\text{الف) } S^2 - 2P = 9 + 4 = 13$$

$$\left(\frac{-(-3)}{1}\right)^2 - 2\left(\frac{-2}{1}\right)$$

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$$\text{ب) } S^3 - 3SP = 27 + 12 = 39$$

$$\left(\frac{-(-3)}{1}\right)^3 - 3\left(\frac{-3}{1}\right)\left(\frac{-2}{1}\right)$$

$$\text{الف) } \binom{7}{5} + \binom{9}{2} = \frac{7 \times 6 \times 5 \times 4 \times 3}{1 \times 2 \times 3 \times 4 \times 5} + \frac{9 \times 8}{1 \times 2} = 21 + 36 = 57$$

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$$\text{ب) } \binom{9}{3} - \binom{11}{2} = \frac{9 \times 8 \times 7}{1 \times 2 \times 3} - \frac{11 \times 10}{1 \times 2} = 126 - 55 = 71$$

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