

الف) $x^2 - 4x + 8 = 0$ $x^2 - 4x + 9 = 1$ $(x-3)^2 = 1$ $x = 3 \pm 1$

ب) $x^2 + 8x + 7 = 0$ $x^2 + 8x + 14 = 9$ $(x+4)^2 = 9$ $x = -4 \pm 3$

الف) $x^2 - 5x + 4 = 0$ $(x-2)(x-3) = 0$ $x = 2, 3$

ب) $x^2 - 5x - 14 = 0$ $(x-7)(x+2) = 0$ $x = 7, -2$

الف) $x^2 - 3x - 5 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\Delta = 9 + 20 = 29$ $x = \frac{3 \pm \sqrt{29}}{2}$

ب) $2x^2 - 4x + \frac{1}{2} = 0$ $\Delta = 14 - 2 = 12$ $x = \frac{4 \pm \sqrt{12}}{4} = \frac{1 \pm \sqrt{3}}{1}$ $x = \frac{4 \pm \sqrt{12}}{4}$

الف) $x^2 - 3x + 2 = 0$ $a+b+c=0$ $x=1$ $x = \frac{c}{a} = 2$

ب) $4x^2 + x - 3 = 0$ $x^2 + x - 12 = 0$ $(x+4)(x-3) = 0$ $x = -4, 3$

الف) $x^2 - 12x + 7 = 0$ $x^2 - 12x + 35 = 0$ $(x-5)(x-7) = 0$

ب) $3x^2 - 10x + 7 = 0$ $x^2 - 10x + 21 = 0$ $(x-3)(x-7) = 0$ $x = 3, 7$

الف) $\Delta = b^2 - 4ac$ $\Delta > 0$ $\Delta = 0$ $\Delta < 0$
 $\Delta > 0$ $\Delta = 0$ $\Delta < 0$
 $\Delta > 0$ $\Delta = 0$ $\Delta < 0$

الف) $25 - 12 > 0$ $\Delta > 0$

ب) $14 - 14 = 0$ $\Delta = 0$

ج) $1 - 14 < 0$ $\Delta < 0$

د) $1 - 8 < 0$ $\Delta < 0$

✓

$\Delta = b^2 - 4ac$ $2x^2 - 3x + a = 0 \rightarrow (-3)^2 - 4(2)(a) = 9 - 8a$

الف) $9 - 8a > 0$ $8a < 9$ $a < \frac{9}{8}$

ب) $9 - 8a \geq 0$ $9 \geq 8a$

ج) $9 - 8a = 0$ $8a = 9$ $a = \frac{9}{8}$

$\frac{9}{8} \geq a$

د) $9 - 8a < 0$ $9 < 8a$ $a > \frac{9}{8}$

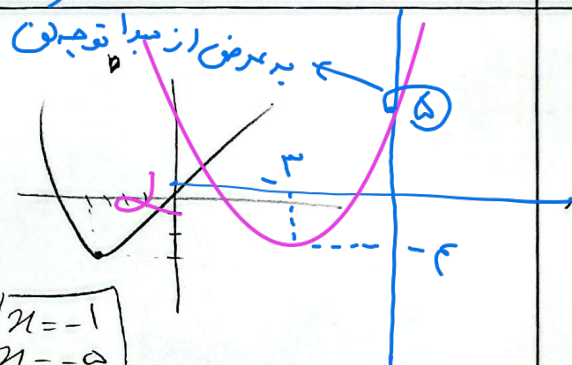
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min $\leftarrow \begin{cases} y = x^2 + 4x + 5 \end{cases}$

الف) $\frac{-b}{2a}$ $\frac{-4}{2 \cdot 1} = -2$

$\begin{vmatrix} -3 \\ -4 \end{vmatrix}$

1, 5

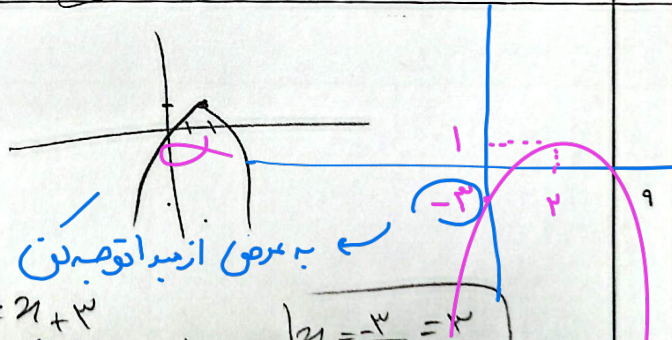


$y = x^2 + 4x + 5 \rightarrow (x+2)(x+2) = y \rightarrow \begin{cases} x = -1 \\ x = -5 \end{cases}$

الف) $\frac{-b}{2a}$ $\frac{-4}{2 \cdot 1} = -2$ $y = -x^2 + 4x - 3$

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

1, 5



ب) $y = -x^2 + 4x - 3 \rightarrow y = x^2 - 4x + 3$

$y = (x-1)(x-3) \rightarrow \begin{cases} x = 1 \\ x = 3 \end{cases}$

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

الف) $3^2 - 2(-2) = 13$

$P = \frac{c}{a} = \frac{-2}{1} = -2$

ب) $3^2 - 3(3)(-2) = 27 + 18 = 45$

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