

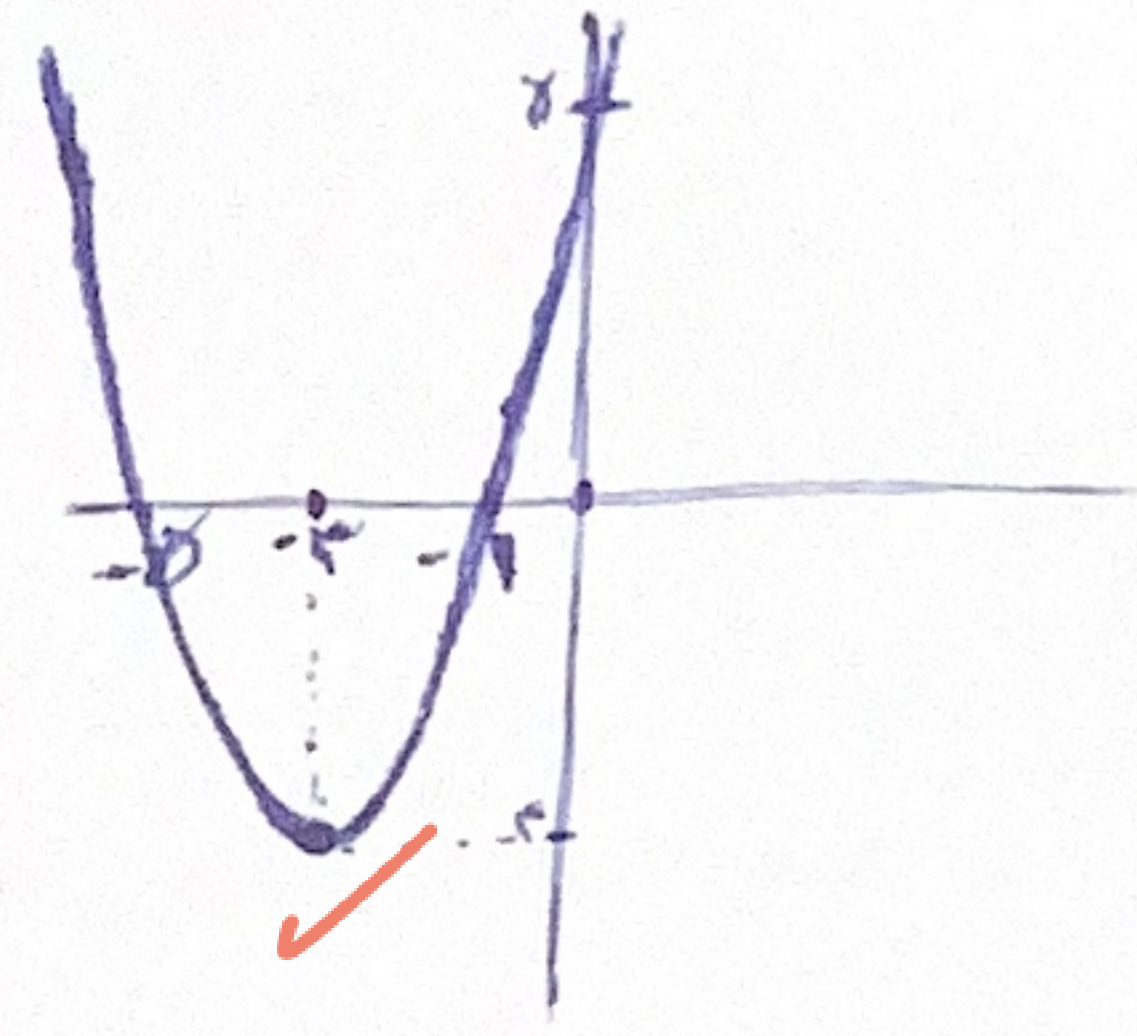
الف) $a \rightarrow$ مثبت $\Rightarrow \min$ $\begin{vmatrix} -3 \\ -4 \end{vmatrix}$ ✓

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

$$(-2)^2 + 4(-2) + 8 = -4$$

ب)

$$\{ \rightarrow a+c=b \Rightarrow x = -\frac{c}{a} = -1 \quad -\frac{c}{a} = -4$$



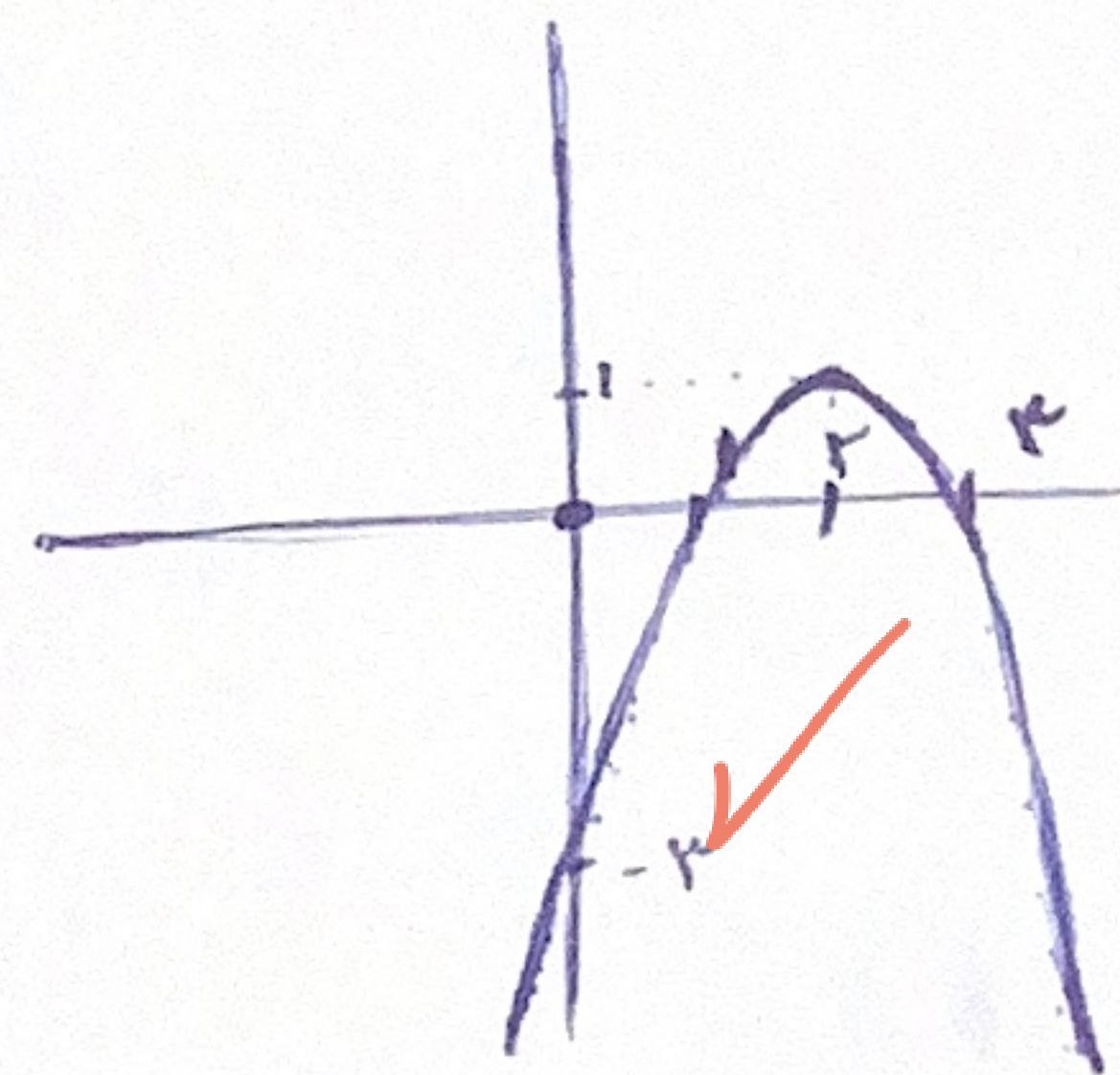
الف) $a \rightarrow$ منفی $\Rightarrow \max$ $\begin{vmatrix} 2 \\ 1 \end{vmatrix}$ ✓

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

$$-2^2 + 8 - 3 = 1$$

ب) نقاط $(-1, 0)$ و $(3, 0)$ ✓

$$\{ \rightarrow a+b+c=0 \Rightarrow x = 1, \frac{c}{a} = 3$$



الف) $\Delta > 0 \Rightarrow b^2 - 4ac > 0 \Rightarrow 9 - 4a > 0 \Rightarrow 9 > 4a \Rightarrow \frac{9}{4} > a \Rightarrow (-\infty, \frac{9}{4}) = a$ ✓

ب) $\Delta = 0 \Rightarrow b^2 - 4ac = 0 \Rightarrow 9 - 4a = 0 \Rightarrow 9 = 4a \Rightarrow \frac{9}{4} = a \Rightarrow [\frac{9}{4}] = a$ ✓

ج) $\Delta < 0 \Rightarrow b^2 - 4ac < 0 \Rightarrow 9 - 4a < 0 \Rightarrow 9 < 4a \Rightarrow \frac{9}{4} < a \Rightarrow (\frac{9}{4}, \infty) = a$ ✓

د) $\Delta \geq 0 \Rightarrow b^2 - 4ac \geq 0 \Rightarrow 9 - 4a \geq 0 \Rightarrow 9 \geq 4a \Rightarrow \frac{9}{4} \geq a \Rightarrow (-\infty, \frac{9}{4}] = a$ ✓

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

$$\Rightarrow x = 1 \pm \sqrt{2}$$

$$x^2 = a^2, -x = 2ab \Rightarrow x = a, -1 = 2b$$

ب) $x^2 - x - 1$

$$\Rightarrow -\frac{1}{x} = b \quad (x - \frac{1}{x})^2 = x^2 - x + \frac{1}{x^2}$$

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

الف) $\Delta = b^2 - 4ac \Rightarrow \Delta = (-2)^2 - 4(1)(-1) = 4 - (-4) = 8$ ✓

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow x = \frac{-(-2) \pm \sqrt{8}}{2} = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2} \Rightarrow x = 1 \pm \sqrt{2}$$

ب) $\Delta = 1 - 4(-4) = 1 - (-16) = 17$

$$\frac{-1 \pm \sqrt{17}}{2} = x \Rightarrow x = \frac{-1}{2} \pm \frac{\sqrt{17}}{2}$$

الف) $x^2 - 11x + 28 = 0 \Rightarrow (x-4)(x-7) = 0 \Rightarrow x = 4, 7$ ✓

ب) $x^2 + 3x - 28 = 0 \Rightarrow (x+7)(x-4) = 0 \Rightarrow x = (-7), 4$ ✓

الف) $8x^2 - 12x + 5 = 0 \Rightarrow x^2 - 1.5x + 0.625 = 0$

$\Rightarrow (x-0.5)(x-1.25) = 0 \Rightarrow x = \frac{1}{2}, \frac{5}{4}$ ✓

ب) $3x^2 - 10x + 7 = 0 \Rightarrow x^2 - 3.33x + 2.33 = 0$

$\Rightarrow (x-1)(x-2.33) = 0 \Rightarrow x = 1, \frac{7}{3}$ ✓

الف) $2x^2 - 8x + 6 = 0 \quad a+b+c=0 \Rightarrow x=1, \frac{c}{a} \Rightarrow x=1, \frac{3}{2}$ ✓

ب) $2x^2 + 8x + 6 = 0 \quad a+c=b \Rightarrow x=(-1), -\frac{c}{a} \Rightarrow x=(-1), -\frac{3}{2}$ ✓

ج) $2x^2 - 8x + 1 = 0 \quad \Delta = b^2 - 4ac \quad \frac{-b \pm \sqrt{\Delta}}{2a} = x$

$(-8)^2 - 4(2 \times 1) = 64 - 8 = 56 \quad x = \frac{-(-8) \pm \sqrt{56}}{2 \times 2} = \frac{8 \pm \sqrt{56}}{4} = \frac{8 \pm 2\sqrt{14}}{4} = \frac{4 \pm \sqrt{14}}{2}$ ✓

د) $4x^2 + 4x + 9 = 0 \quad \Delta = 4^2 - 4 \times 9 = -32 \rightarrow$ (لا يوجد حلا حقیقی) $\rightarrow$ (لا جواب حقیقی دارد) ✓

$\left(\frac{-b}{a}\right)^2 - 2 \frac{c}{a} = 3^2 - (-4) = 9 + 4 = 13$ ✓

الف) $\left(\frac{-b}{a}\right)^2 - 2 \frac{c}{a} = 3^2 - (-4) = 9 + 4 = 13$ ✓

ب) $\left(\frac{-b}{a}\right)^2 - 2 \left(\frac{c}{a} \times \frac{-b}{a}\right) = 3^2 - 2 \left(-\frac{4}{2}\right) = 9 - (-4) = 13$ ✓

الف) $\binom{9}{2} = \frac{9!}{(9-2)! \times 2!} = \frac{9!}{7! \times 2!} = 36$ ✓

ب) $\binom{9}{2} = \frac{9!}{(9-2)! \times 2!} = \frac{9!}{7! \times 2!} = 36$ ✓

$\binom{9}{2} = \frac{9!}{(9-2)! \times 2!} = \frac{9!}{7! \times 2!} = 36$ ✓

$\binom{9}{2} = \frac{9!}{(9-2)! \times 2!} = \frac{9!}{7! \times 2!} = 36$ ✓

$21 + 34 = 55$ ✓

$14 - 21 = -7$ ✓