

الف) $4u^2 - 4u - 4 \rightarrow u^2 - u - 1 \rightarrow (u-4)(u+1) = 0, -1$
 $\therefore 4 \rightarrow \frac{4}{4} = \frac{1}{1} \rightarrow \frac{-1}{4} = \frac{-1}{1}$

ب) $u^2 - 1u - 1 \rightarrow u^2 - 1u - 1 \rightarrow (u+1)(u-1) = 0, u = -1$
 $\frac{1}{1} = \frac{1}{1}, \frac{-1}{1} = \frac{-1}{1}$

ج) $4u^2 - 4u - 1 \rightarrow u^2 - 1u - 1 \rightarrow (u-4)(u+1) = 0, u = \frac{4}{1} = 4, \frac{-1}{1} = -1$
 $\frac{4}{1} = \frac{4}{1}, \frac{-1}{1} = \frac{-1}{1}$

د) $2u^2 - 4u - 1 \rightarrow u^2 - 2u - 1 \rightarrow (u-4)(u+1) = 0, u = \frac{4}{1} = 4, \frac{-1}{1} = -1$
 $\frac{4}{1} = \frac{4}{1}, \frac{-1}{1} = \frac{-1}{1}$

الف) $(u-1)(u+2) = 0 \rightarrow u = 1, u = -2$

ب) $2u^2 + 4u + 1 \rightarrow a+c=b \xrightarrow{u=-1} u = -\frac{1}{2}$

ج) $u^2 + 2u + 1 \rightarrow \Delta \rightarrow \frac{-2 \pm \sqrt{4-4}}{2} \rightarrow \Delta = 0$ جواب ندارد

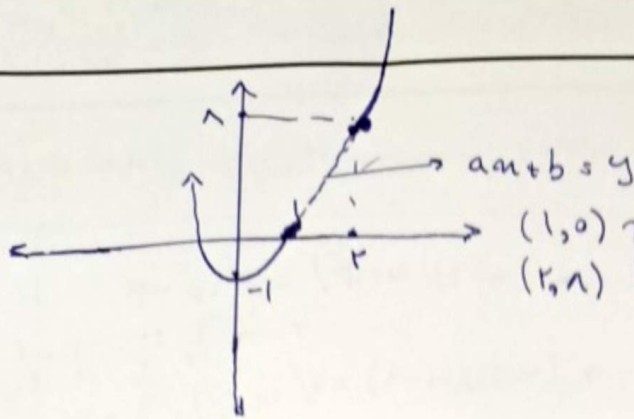
د) $2u^2 + 3u - 2 \rightarrow u^2 + 3u - 4 \rightarrow \Delta \rightarrow \frac{-3 \pm \sqrt{9+16}}{2} = \frac{-3 \pm 5}{2}$

$A \times B = \{(1,2), (1,3), (2,2), (2,3), (3,2), (3,3)\}$ $A \times B - B^2 \rightarrow \{(1,2), (1,3)\}$
 $B^2 = \{(2,2), (2,3), (3,2), (3,3)\}$

الف) $m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \xrightarrow{m=-1} \checkmark \{(1,1), (2,1), (-2,m), (2,-1), (3,1), (-1,4)\}$
 $a+c=b \xrightarrow{m=1} \{(2,1), (3,4)\} \times$

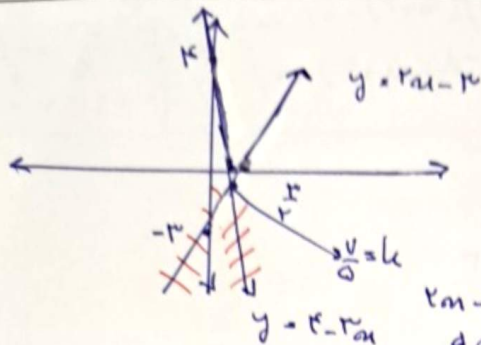
ب) $m^2 = m+2 \xrightarrow{m=1} \{(1,3), (-1,4)\} \times$
 $\xrightarrow{m=2} \{(2,4), (3,4), (2,1)\} \times$
 مع سدهای
 درجتهای زوج
 باقی بماند

$a^2 = 3a - 2 \rightarrow a^2 - 3a + 2 = 0 \xrightarrow{a=2} \{(1,4), (1,4), (4,4)\} \checkmark$
 $a+b+c=0 \xrightarrow{a=1} \{(1,1), (1,1), (1,1)\} \times$



تقاطع خطی است که در دو نقطه از آن
رابطه باشد $(0, 1)$ و $(2, 0)$ را دارد.
شیب $a = 1 \Rightarrow \frac{1-0}{2-0} = \frac{1}{2}$
در این ازجهت $a(1) + b = 0$
 $b = -a$
 $ab = -4$

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تقاطع خطی است. به این دلیل که در دو نقطه از آن
بیشتر در خط است

$$f(x) = \begin{cases} rx - r & x \geq \frac{1}{a} \\ r - rx & x \leq \frac{1}{a} \end{cases}$$

به این دلیل که در دو نقطه از آن
بیشتر در خط است $\frac{1}{a} = \frac{1}{a}$
 $rx - r = r - rx$
 $2rx = 2r \Rightarrow x = \frac{1}{a}$

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الف) $y^2 - 4y = x^2 - 4x + 4 \Rightarrow (y_1^2 - 4y_1) = (y_2^2 - 4y_2)$
 $\Rightarrow y_1^2 - y_2^2 - 4(y_1 - y_2) = 0 \Rightarrow (y_1 - y_2)(y_1 + y_2 - 4) = 0$
 $\Rightarrow y_1 = y_2$ یا $y_1 + y_2 = 4$
ب) $|x_1| + |y_1| = r \Rightarrow x_1 = \pm r \cos \theta, y_1 = \pm r \sin \theta$
ج) $|x_1| + |y_1| = r \Rightarrow x_1 = \pm r \cos \theta, y_1 = \pm r \sin \theta$
د) $(x_1 + 1)^2 + y_1^2 = 0 \Rightarrow x_1 = -1, y_1 = 0$

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الف) $(x_1, y_1) \in f, (x_2, y_2) \in f \Rightarrow x_1 = x_2 \Rightarrow y_1 = y_2$
ب) $(x_1, y_1) \notin f, (x_2, y_2) \in f \Rightarrow x_1 \neq x_2 \Rightarrow y_1 \neq y_2$
ج) $(x_1, y_1) \in f, (x_2, y_2) \notin f \Rightarrow x_1 = x_2 \Rightarrow y_1 = y_2$
د) $(x_1, y_1) \notin f, (x_2, y_2) \notin f \Rightarrow x_1 \neq x_2 \Rightarrow y_1 \neq y_2$

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الف) $x \sin y = y \sin x \Rightarrow x = 0 \Rightarrow \sin 0 = 0 \Rightarrow y \in \mathbb{R}$
ب) $\frac{x+y}{\sqrt{xy}} = 2 \Rightarrow x+y = 2\sqrt{xy} \Rightarrow x^2 + 2xy + y^2 = 4xy \Rightarrow (x-y)^2 = 0 \Rightarrow x = y$