

الف) $7x^2 - 5x - 6 = 0 \rightarrow x^2 - 5x - 42 = 0$
 $(x-9)(x+6) = 0 \rightarrow \frac{9}{6}, \frac{-6}{6}, \frac{-7}{6}$

ب) $2x^2 - 11x - 6 = 0$
 $x^2 - 11x - 6 = 0$
 $(x-9)(x+1) = 0 \rightarrow \frac{9}{1}, \frac{-1}{1}$

2) $5x^2 - 4x - 3 = 0$
 $x^2 - 4x - 12 = 0$
 $(x-6)(x+2) = 0 \rightarrow \frac{6}{2}, \frac{-2}{2} = \frac{1}{1}$

> $2x^2 - 4x - 12 = 0$
 $x^2 - 4x - 24 = 0$
 $(x-8)(x+3) = 0 \rightarrow \frac{8}{1}, \frac{-3}{1}$

انت) $x^2 - 5x - 14 = 0$
 $\Delta = 25 + 56 = 81$
 $x = \frac{5 \pm \sqrt{81}}{2} = \frac{5 \pm 9}{2}$

ب) $2x^2 + 5x + 2 = 0$
 $x^2 + 5x + 2 = 0 \rightarrow -2, -2 \rightarrow \frac{-2}{2}, \frac{-2}{2}$

2) $x^2 + 2x + 2 = 0 \rightarrow \Delta = 4 - 8 = -4 < 0 \rightarrow$ ریشه ندارد

> $3x^2 + 2x - 2 = 0 \rightarrow \Delta = 4 + 24 = 28$
 $x = \frac{-2 \pm \sqrt{28}}{6} = \frac{-1 \pm \sqrt{7}}{3}$
 $\frac{\sqrt{28}}{6} = \frac{\sqrt{4 \times 7}}{6} = \frac{2\sqrt{7}}{6} = \frac{\sqrt{7}}{3}$

$$A \times B = B \times A$$

$$\{(1,2), (2,1), (1,1), (2,2), (1,3), (3,1), (2,3), (3,2)\} = \{(1,2), (2,1), (1,3), (3,1), (2,3), (3,2)\}$$

$$= \{(1,2), (1,3)\}$$

$$c) m^r = m + r$$

$$m^r - m - r = 0$$

$$(m-r)(m-1) = 0$$

$$\begin{matrix} (r) \times (-1) \checkmark \rightarrow m = -1 \\ \downarrow \\ (r, r), (r, 1) \end{matrix}$$

$$(r, r), (r, 1)$$

$$c) m^r = m + r$$

$$m^r - m - r = 0 \rightarrow \boxed{m = r} \quad \text{!} \quad m = -1 \times (-1, 2), (-2, 1)$$

این صفت! بون!

1/2

$$a^r = r a - r$$

$$a^r - r a + r = 0$$

$$(a-1)(a-r) \rightarrow \boxed{r} \checkmark \rightarrow (1,1), (1,2)$$

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$$f(x) = \begin{cases} x^{r-1} & x, r \\ a x + b & 1 \leq x \leq r \\ x^r & x > r \end{cases} \xrightarrow{x=1} a+b=0 \rightarrow \boxed{b=-a} \xrightarrow{x=r} r a + b = 1 \rightarrow \boxed{b=1-ra}$$

سوال! $a \times b$!

$$1 - r a = -a \rightarrow 1 - a = 0 \rightarrow \boxed{a=1}$$

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$$f(x) = \begin{cases} r x - r & x \geq r \\ r - r x & x \leq r \end{cases} \xrightarrow{x=r} r x - r = r - r x \rightarrow a x = v$$

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$$\boxed{x = \frac{v}{a}}$$

الف) $y^2 - 4y = x^2 - 4x + 3$

بین آرایش نمودار: $\rightarrow$ تابع $\times$ ()

در صورت $x=0 \rightarrow y^2 - 4y = 3 \rightarrow y(y-4) = 3$
 $\rightarrow \pm \sqrt{4}$

در صورت $(x_1, y_1) \rightarrow x_1, x_2$
 $(x_2, y_2) \rightarrow y_1^2 - 4y_1 = y_2^2 - 4y_2 = 3$
 $y_1^2 - y_2^2 = 4(y_1 - y_2)$

$(y_1 - y_2)(y_1 + y_2 + y_1 y_2) = 4(y_1 - y_2)$

$y_1 \neq y_2 \rightarrow y_1^2 + y_2^2 + y_1 y_2 = 4$
 $x(y_1^2) + (y_2^2 + y_1 y_2) - 4 = 0$

$y_1 = \frac{-y_2 \pm \sqrt{y_2^2 + 4y_1 y_2}}{2}$
 $\rightarrow \frac{-y_2 - 4y_2}{2} = \frac{-5y_2}{2}$
 $\rightarrow \frac{-y_2 + 4y_2}{2} = \frac{3y_2}{2}$

در صورت $|x| + |y| = 3 \xrightarrow{x=0} |y| = 3 \rightarrow y = \pm 3$

در صورت: $|y| = -|x| \rightarrow y = x$
 $y = -x$

2) $|y| = \sqrt{1 - \cos x} \rightarrow 0$ تابع $\times$
 $|y| = \sqrt{\frac{1}{2}}$
 $y = \pm \frac{1}{\sqrt{2}}$

> $y^2 + x^2 + 2x + 1 = 0$

$(x+1)^2 + y^2 = 0$
 $\rightarrow$ نقطه $(-1, 0)$ $\rightarrow$ تابع $\checkmark$

Subject:

Year: Month: Day: ()

الف) $\sqrt{y} + x^2 = 2x - 2$ $x_1 = x_2$ - 9
 $\sqrt{y} = -x^2 + 2x - 2$ $(x_1, y_1), (x_2, y_2) \rightarrow \sqrt{y_1} = \sqrt{y_2}$

$y_1^{\frac{1}{2}} = y_2^{\frac{1}{2}}$
 $y_1 = y_2$

ب) $y_1^2 + 2y_1 = 2x_1$ $x_1 = x_2 \rightarrow y_1^2 + 2y_1 = y_2^2 + 2y_2$
 $y_1^2 + 2y_1 = 2x_2$

$y_1^2 - y_2^2 = -2(y_1 - y_2)$

$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) = -2(y_1 - y_2)$

$y_1 \neq y_2 \rightarrow x(y_1^2 + y_1 y_2 + y_2^2) + 2 = 0 \rightarrow \Delta = y_2^2 - 4(y_1^2 + 2)$
 $= y_2^2 - 4y_1^2 - 8$

$\Delta = -4y_1^2 - 8 < 0 \rightarrow$ بی‌ممکن

✓ $\leftarrow$ پس فرض مان $(y_1 \neq y_2)$ نقض می‌شود و $y_1 = y_2$ صحیح است

الف) $x \sin y = y \sin x$ - 6

$x=0 \rightarrow 0 = y \sin 0$

همیشه عددی تواندها شده

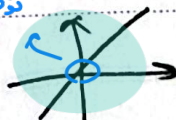
ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \xrightarrow{\text{جذبات}} \frac{x}{y} + \frac{y}{x} + 1 = 2$

$\frac{x^2 + y^2}{xy} = 1$

$x^2 + y^2 - xy = 0$

$(x - y)^2 = 0$

$(x, y \neq 0)$ پس



✓ $\leftarrow$ $x = y$

TANDIS

ب-۴) $(3, m^2)$ و $(3, m+2) \leadsto m^2 = m+2 \leadsto m^2 - m - 2 = 0$

$m=2 \rightarrow (2, 1)$ و $(2, 4) \times$

$m=-1 \rightarrow (-1, 4)$ و $(-1, 3) \times$ به ازای هیچ مقدار m عبارت تانژنت!

۴) $a=1$ و $a=2$ در هر دو ضابطه مشترک هستند پس باید ضابطه ها به ازای آنها صحیح عمل کنند.

$(1)^2 - 1 = a(1) + b \leadsto a + b = 0 \leadsto b = -a$

$2(a) + b = 2^2 \xrightarrow{b=-a} 2a - a = 4 \leadsto a = 4 \leadsto b = -4$

$a \times b = 4(-4) = -16$

ب-۱۰) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$

این عبارت تنها زمانی به قدر است که $1 = \sqrt{\frac{x}{y}}$ باشد پس

$\sqrt{\frac{x}{y}} = 1 \leadsto \frac{x}{y} = 1 \leadsto x = y$ و $(x, y \neq 0)$

