

ا) $x^2 - 2x - 3y = 0 \rightarrow (x-1)(x+1) = 0 \rightarrow \begin{cases} x_1 = -\frac{1}{y} \\ x_2 = \frac{1}{y} \end{cases}$

ب) $x^2 - 11x - 9 = 0 \rightarrow (x-9)(x+1) = 0 \rightarrow \begin{cases} x_1 = \frac{9}{y} \\ x_2 = -\frac{1}{y} \end{cases}$

د) $x^2 - 2x - 24 = 0 \rightarrow (x-6)(x+4) = 0 \rightarrow \begin{cases} x_1 = \frac{6}{y} \\ x_2 = -\frac{4}{y} \end{cases}$

ج) $x^2 - 2x - 12 = 0 \rightarrow (x-6)(x+2) = 0 \rightarrow \begin{cases} x_1 = \frac{6}{y} \\ x_2 = -\frac{2}{y} \end{cases}$

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ا) $(x-1)(x+2) = 0 \rightarrow \begin{cases} x_1 = 1 \\ x_2 = -2 \end{cases}$

ب) $\Delta = 20 - 24 = -4 \rightarrow \frac{-2 \pm 2}{2} \rightarrow \begin{cases} x_1 = 0 \\ x_2 = -1 \end{cases}$

ج) $\Delta < 0$

د) $\Delta = 9 + 24 = 33 \rightarrow \frac{-3 \pm \sqrt{33}}{2} \rightarrow \begin{cases} x_1 = \frac{-3 + \sqrt{33}}{2} \\ x_2 = \frac{-3 - \sqrt{33}}{2} \end{cases}$

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

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ا) $m^2 - m - 2 = 0$
 $m = \frac{1 \pm \sqrt{1+8}}{2} \Rightarrow m = 2$
 $(2, m), (2, 1)$
 $(-1, 2), (-1, 1)$
 $(3, 1), (3, 1)$
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$f(x) = \{(1, a), (1, 2a-2), (a^2, 2a+2)\}$

$a^2 - 2a + 2 = 0$

$a = \frac{2 \pm \sqrt{4-8}}{2} \Rightarrow a = 2$

$(1, a), (a^2, 2a+2) \rightarrow (1, 1), (1, 4)$

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$$f(n) = \begin{cases} n^r - 1 & n \leq 1 \\ an + b & 1 \leq n \leq r \\ n^r & n \geq r \end{cases} \quad \begin{aligned} & n=1 \rightarrow n^r - 1 = an + b \rightarrow 0 = a + b \\ & n=r \rightarrow an + b = n^r \rightarrow ra + b = 1 \end{aligned} \Rightarrow a = 1, b = -1 \quad \text{اذا } n=1 \rightarrow 1 - 1 = 0 \quad \text{اذا } n=r \rightarrow r - 1 = r - 1$$

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$$f(n) = \begin{cases} r n^r & n \geq k \\ f - r n & n \leq k \end{cases} \quad \begin{aligned} & n=k \rightarrow r n^r = f - r n \rightarrow r k^r = f - r k \rightarrow \partial k = \sqrt[r]{\frac{f}{r}} \end{aligned}$$

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ا) $n=1 \rightarrow y^r - y = 0 \rightarrow y(y^r - 1) = 0 \rightarrow y = \pm 1, 0$ تابع

ب) $|a| + |y| = \sqrt{r} \rightarrow n^r + y^r = \sqrt{r} \rightarrow n^r + y^r = 1 \rightarrow \int_{-1}^1 n^r y^r \rightarrow (n+y)^r = 1 \rightarrow y = \pm 1 \rightarrow n = \pm \sqrt[r]{1 - y^r}$ تابع

ج) $|y| = \sqrt{1 - \cos n} \quad 1 - \cos n \geq 0 \rightarrow 1 \geq \cos n \rightarrow -1 \leq \cos n \leq 1 \rightarrow \cos n = 1 \rightarrow |y| = \sqrt{1 - 1} = 0 \rightarrow y = 0$ تابع

د) $y^r + n^r + 1 = 0 \rightarrow y^r + (n+1)^r = 0 \rightarrow y^r = -(n+1)^r \rightarrow y = \pm (n+1)$ تابع

هـ) $\sqrt{y} + x^r = 2n - 1 \rightarrow \sqrt{y_1} = -x_1^r + 2n - 1 \rightarrow \sqrt{y_2} = -x_2^r + 2n - 1 \rightarrow \sqrt{y_1} = \sqrt{y_2} \rightarrow y_1 = y_2$ تابع

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ا) $(y_1 - y_2)(y_1^r + y_1 y_2 + y_2^r) = 0 \rightarrow \begin{cases} y_1 - y_2 = 0 \\ y_1^r + y_1 y_2 + y_2^r = 0 \end{cases} \rightarrow y_1 = y_2 = \frac{-y_2 \pm \sqrt{\Delta}}{2} \quad \Delta = y_2^r - 4(y_2^r + y_2^2) \rightarrow y_1 = \frac{-y_2 \pm \sqrt{y_2^r - 4(y_2^r + y_2^2)}}{2}$ تابع

ب) $y^r + y = 0 \rightarrow \begin{cases} y_1^r + y_1 = 0 \\ y_2^r + y_2 = 0 \end{cases} \rightarrow y_1 = y_2 = 0$ تابع

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ا) $n=0 \rightarrow r n y = y \quad y \in \mathbb{R}$ تابع

ب) $\frac{n}{y} + \frac{y}{n} + r = f \rightarrow \frac{n}{y} + \frac{y}{n} = f - r \rightarrow \frac{n^2 + y^2}{ny} = f - r \rightarrow n^2 + y^2 = (f - r)ny \rightarrow n^2 - (f - r)ny + y^2 = 0 \rightarrow n = y$ تابع

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