سال نو مبارک

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۱- $a^2 + 2a = a^2 - 4$

$a = -2$

۲- $x = 2 \Rightarrow 2^3 = 4 + b \quad b = -1$

$\frac{x^2 + a}{2x + 1} = \frac{4 + a}{4 + 1} \quad x = 2 \quad \frac{4 + a}{4 + 1} = 3 \quad 4 + a = 15$

$a = 11 \quad x = 1 \rightarrow \frac{1 + 11}{2 + 1} = \frac{12}{3} = 4$

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$2x^2 + ax + b \rightarrow 2(x+1)(x-4) \rightarrow$

$2x^2 - 4x - 8 \quad a = -4 \quad b = -8$

$f(4) \frac{4x + 1}{2x^2 - 4x - 1} = \frac{5}{-12} = \frac{-5}{12}$

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$-4(x+1)^2 = -4x^2 - 8x - 4 \quad a = -8$

$b = -4$

$-4 - 8 = -12$

۵-

$(x-1)^2 = x^2 - 2x + 1 \quad m = -2$

$m^2 - 4 < 0 \rightarrow m^2 < 4 \rightarrow -2 < m < 2$

$(-2, 2)$

۶- $x \neq 0 \quad \varepsilon - \frac{1}{x^2} \geq 0 \quad \varepsilon \geq \frac{1}{x^2} \to -2 < \frac{1}{x^2} < 2$

$\left(-\infty, -\frac{1}{2}\right] \cup \left(\frac{1}{2}, +\infty\right)$

۷- $mx^2 + 2mx + 1 \quad m > 0 \quad \Delta \leq 0 \qquad [0, 1]$

$\varepsilon m^2 - \varepsilon m \leq 0 \quad \varepsilon m(m-1) \leq 0$

$m \leq 1$

$a = \frac{1}{2} \quad \varepsilon \frac{1}{2} + k = 2 \to 2 + k = 2 \quad k > 0$ ۸-

$0 + \frac{1}{2} \leq \frac{1}{2}$

$x = 0 \to \frac{-b}{2} = -2$ ۹-

$b = -2 \quad 2^2\left(-\frac{2}{2}\right) - 2 = -\varepsilon \to -2a + 2$

$a = +2$

$a - b + 2 + 2 = 5$

$x = 2 \to 2a^2 + 2a = \varepsilon$ ۱۰-

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

$2(a+2)(a-1) = 0 \quad a = 1$

$a = -2$