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$$x=a \rightarrow a^r + ra = a^r - r$$

$$ra = -r$$

$$a = -r$$

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$$r(r) + b = r$$

$$r + b = r$$

$$b = -r$$

$$f(x) = \frac{x^r + 11}{r x + 1}$$

$$f(1) = \frac{1 + 11}{r + 1} = 12$$

$$\frac{(r)^r + a}{r(r) - (-1)} = \frac{r + a}{r} = r \rightarrow 10 = r + a$$

$$a = 11$$

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$$\begin{cases} x = -1 \\ x = r \end{cases}$$

$$\begin{cases} r - a + b = 0 \\ r^r + ra + b = 0 \\ r_0 + aa = 0 \\ aa = -r \\ a = -r \end{cases}$$

$$\begin{cases} r - a + b = 0 \\ a = -r \\ r + r + b = 0 \\ b = -1 \end{cases}$$

$$f(x) = \frac{r x + 1}{r x^r + a x + b}$$

$$f(1) = \frac{r(1) + 1}{r(1)^r - r - 1}$$

$$f(1) = -\frac{a}{1r}$$

$$x = -1 \quad -f(-1)^r - a + b = 0$$

$$b - a = r$$

$$-(r x^r - a x + b) = -(r x + r)^r = -r x^r - r - 1 x$$

$$a = -1 \quad b = -r$$

$$-r - 1 = -1r$$

صورت II به n=1، ضرایب این است باشد

$$(x-1)(x^r + mx + 1) = 0$$

$$x - 1 = 0 \rightarrow x = 1$$

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$$(x-1)^r = x^r + mx + 1$$

$$x^r - rx + 1 = x^r + mx + 1$$

$$m = -r$$

$$x^r + mx + 1 = 0$$

$$m^r - r \leq 0$$

$$-r \leq m \leq r \quad \text{I}$$

$$\text{I} \cup \text{II} = [-r, r]$$

$$\frac{f x^r - 1}{x^r} \geq 0$$

$$f x^r - 1 \geq 0$$

$$x^r \geq \frac{1}{f} \rightarrow x \geq \frac{1}{f}$$

$$\rightarrow x \leq -\frac{1}{f}$$

$$(-\infty, -\frac{1}{f}] \cup [\frac{1}{f}, +\infty)$$

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$$m x^r + r m x + 1 \geq 0$$

$$b^r - f a c = f m^r - f m$$

$$f m^r - f m < 0$$

$$f m (m-1) < 0$$

$$m < 0$$

$$m > 1$$

$$m \in [0, 1]$$

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$$f \left(\frac{1}{f}\right) + k = \frac{f}{f} + k = r + k = r \rightarrow k = 0$$

$$f x^r - 1 = (r x + 1)(r x - 1)$$

$$a + k = \frac{1}{f} + 0 = \frac{1}{f}$$

$$r x - 1 \neq 0$$

$$r x \neq 1$$

$$x \neq \frac{1}{r}$$

$$a = \frac{1}{f}$$

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$$r a \left(-\frac{r}{r}\right) + r = r \left(-\frac{r}{r}\right) + (-r) \rightarrow -r a + r = -r - r \rightarrow -r a = -4 \rightarrow a = 4$$

$$\frac{r x^r - 1}{r x + r} = \frac{(r x - r)(r x + r)}{r x + r} = r x - r$$

$$g(x) = r x + b \rightarrow b = -r$$

$$a - b = 4 - (-r) = 4$$

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$$r a^r + r a = r + r$$

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

$$\Delta = b^r - f a c = r + r r = r^2$$

$$a_1 = \frac{-b + \sqrt{\Delta}}{r a} = \frac{-r + r}{r} = \boxed{1}$$

$$a_2 = \frac{-b - \sqrt{\Delta}}{r a} = \frac{-r - r}{r} = \boxed{-2}$$

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