

$$x=a \rightarrow a^p + pa = a^p - F - pa = -F \rightarrow a = -\frac{F}{p}$$

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$$g(x) = px + b \quad f(x) = \frac{x^p + a}{px + b} \rightarrow p = \frac{F+a}{F+1} \rightarrow F+a = 15 \rightarrow a = 11$$

$$p = F+b \rightarrow b = -1$$

$$f(x) = \frac{x^p + 11}{px + 1} \xrightarrow{x=1} \frac{1+11}{p} = \frac{12}{p} = F$$

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$$p(x+1)(x-F) = p(x^p - Fx + x - F) = p(x^p - px - F) = px^p - 4x - 1 = px^p + ax + b$$

$$\boxed{a = -4, b = -1}$$

$$f(x) = \frac{px+1}{px^p - 4x - 1} \rightarrow f(1) = \frac{F+1}{F-4-1} = \frac{F+1}{-F-1} = \frac{a}{-11}$$

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$$R = -\frac{1}{3} \Rightarrow -x(x+1)^p - F(x+1)^p = -F(x^p + 1 + px) = -Fx^p - F - 1 - Fp = -Fx^p + ax + b$$

$$\boxed{b = -F, a = -1}$$

$$a + b = -1 - F = -12$$

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$$f(x) = \frac{px}{(x-1)(x^p + mx + 1)}$$

$$D = R = -\frac{1}{3} \rightarrow (x-1)^p = x^p - px + 1 = x^p + mx + 1$$

$$-px = mx \rightarrow m = -p$$

(ساده‌تر)

$$\Delta < 0 \rightarrow b^2 - 4ac = m^2 - Fx + 1 = m^2 - F < 0$$

$$\frac{(m-p)(m+p) < 0}{p^2 \quad 2-p}$$

$$\boxed{(-p, p)}$$

$$\frac{-p}{1} \frac{p}{-1} \rightarrow (-p, p)$$

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