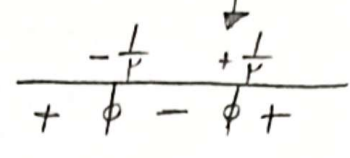


$$f(x) = \sqrt{\left(r + \frac{1}{x}\right)\left(r - \frac{1}{x}\right)} \rightarrow \left(r + \frac{1}{x}\right)\left(r - \frac{1}{x}\right) \geq 0$$

$$D_f = \left(-\infty, -\frac{1}{r}\right] \cup \left[\frac{1}{r}, +\infty\right)$$



1) $m > 0$ 2) $\Delta \leq 0 \rightarrow r m^2 - r m \leq 0 \rightarrow m^2 - m \leq 0 \rightarrow m(m-1) \leq 0$

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

① \wedge ② $\Rightarrow m \in (0, 1]$

if $x \neq a \rightarrow f(x) = \frac{r x^r - 1}{r x - 1} \rightarrow r x - 1 \neq 0 \rightarrow x \neq \frac{1}{r} \rightarrow a = \frac{1}{r}$

$f(x) = g(x)$ if $x = \frac{1}{r} \rightarrow r + k = 1 + 1 \Rightarrow k = 0$

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

$f(x) = g(x)$ if $x = 1 \rightarrow \frac{r x^r - F}{r x + r} = r x + b \rightarrow \frac{r - F}{r + r} = r + b \rightarrow b = -r$

$f(x) = g(x)$ if $x = -\frac{r}{r} \rightarrow r a x + r = r x - r \rightarrow -r a + r = -r \rightarrow a = r$

$a - b = r - (-r) = 2r$

$f(x) = g(x)$ if $x = r \rightarrow r a^r + r a = F \rightarrow r a^r + r a - F = 0$

$a^r + a - r = 0$

$a = -r$

$a = 1$

$$f(x) \xrightarrow{x=a} a^2 + 2a = a^2 - 4 \rightarrow \boxed{a = -2}$$

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if (۲ و ۳) $\rightarrow f(x) = g(x) \rightarrow 2 = F + b = \frac{F+a}{F-b} \rightarrow b = -1$
 $\rightarrow 3 = \frac{F+a}{a} \rightarrow a = 11$

$$f(x) = \frac{x^2 + 11}{2x + 1} \Rightarrow f(1) = \frac{12}{3} = \boxed{4}$$

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$D(f) = \mathbb{R} - \{-1, 4\} \rightarrow \{-1, 4\} =$ ریشه های مخرج

$$x_1 \cdot x_2 = (F)(-1) = \frac{b}{F} \rightarrow b = \boxed{-1}$$

$$x_1 + x_2 = F - 1 = -\frac{a}{F} \Rightarrow a = \boxed{-4}$$

$$f(x) = \frac{Fx + 1}{2x^2 - 4x - 1} \rightarrow f(1) = \frac{a}{2 - 4 - 1} = \boxed{-\frac{a}{14}}$$

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$D(f) = \mathbb{R} - \{-1\} \rightarrow \{-1\} =$ ریشه مضاعف مخرج $\rightarrow x_1 = x_2 = -1$

$$\left. \begin{aligned} x_1 \cdot x_2 &= (-1)^2 = \frac{b}{-F} \rightarrow b = \boxed{-F} \\ x_1 + x_2 &= -2 = -\frac{a}{-F} \rightarrow a = \boxed{-1} \end{aligned} \right\} \rightarrow a + b = \boxed{-12}$$

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طبق اطلاعات صورت مسئله برانتز سمت راست در مخرج یا باید دارای ریشه مضاعف $\{1\}$ باشد و یا

ریشه نداشته باشد $\Delta \leq 0$

$$(m+2)(m-2) \leq 0 \leftarrow m^2 - 4 \leq 0$$

$$\frac{-2}{+} \quad \frac{2}{-} \quad \frac{+}{+} \rightarrow m \in \boxed{[-2, 2]}$$

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