

$$f(a) \Rightarrow a^2 + ka = a^2 - f$$

$$\forall a = -f$$

$$\underline{a = -f}$$

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$$w f(x) = \frac{x^2 + a}{x - b} = \frac{f x^2 + a}{x - b} \rightarrow f + a = 10$$

$$\underline{a = 11}$$

$$w g(x) = \frac{x^2 + b}{x - 1} \rightarrow \underline{b = -1}$$

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$$f(x) = \frac{x^2 + 11}{x + 1} \rightarrow f(1) = \frac{1 + 11}{1 + 1} = \frac{12}{2} = 6$$

x	-1	$\frac{1}{f}$	f
$\frac{1}{x+1}$	$-$	$-$	$+$
$\frac{1}{x^2 + a x + b}$	$-$	$+$	$+$
$f(x)$	$+$	$-$	$+$

$$\frac{x = -1}{x^2 + a x + b = 0} \rightarrow x - a + b = 0$$

$$\textcircled{1} b - a = -1$$

$$\frac{x = \frac{1}{f}}{x^2 + a x + b = 0} \rightarrow \frac{1}{f^2} + \frac{a}{f} + b = 0$$

$$\textcircled{2} a - b = \frac{1}{f^2}$$

$$\textcircled{1} \textcircled{2} \rightarrow \begin{cases} a = -\frac{1}{f} \\ b = -\frac{1}{f} \end{cases} \quad \underline{f(x) = \frac{a}{-1-f}}$$

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$$\Delta \geq 0 \rightarrow a^2 + 16b \geq 0 \textcircled{1}$$

$$a \leq b \geq -1 \text{ و } (-f) \geq -12$$

$$\frac{x = -1}{x^2 + a x + b = 0} \rightarrow -1 - a + b = 0$$

$$b - a = 1$$

$$b = f - 1 \text{ و } a = f$$

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$\textcircled{1}, \textcircled{2}$

$$a^2 + 16(f + a) \geq 0 \Rightarrow a^2 + 16a + 16f \geq 0 \rightarrow (a + 8)^2 \geq 0 \rightarrow \underline{a \geq -8}$$

$$x^2 + m x + 1 = 0 \quad x = 1$$

$$1 + m + 1 = 0$$

$$m = -2 \textcircled{1}$$

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

$$m^2 < 4$$

$$-2 < m < 2 \textcircled{2}$$

$$\textcircled{1} \text{ و } \textcircled{2} \rightarrow -2 < m < 2$$

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$$f(x) = \sqrt{c - \frac{1}{x^r}}$$

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

$$c \geq \frac{1}{x^r} \rightarrow c \leq x^r \rightarrow \begin{cases} x \geq \sqrt[r]{c} \\ x \leq -\sqrt[r]{c} \end{cases}$$

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$$\rightarrow \Delta < 0$$

$$f_m^2 - f_m < 0$$

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

f_m	0	1
f_m	-	+
$m-1$	-	-
$f(x)$	+	-

$$m \in (0, 1)$$

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$$\underline{a \geq \frac{1}{p}}$$

$$f(x) = g(x) \rightarrow \begin{matrix} a & k & z & p \\ \frac{1}{p} & \frac{1}{p} & & \end{matrix}$$

$$a + k = \frac{1}{p} + 0 = \frac{1}{p} \text{ (o/o)}$$

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

$$a \cdot b = r \cdot (-r) = -r^2$$

$$\hookrightarrow f\left(\frac{r}{x}\right) = g\left(\frac{r}{x}\right) \rightarrow \begin{matrix} -ra + r \cdot r - r - r = -r \\ -ra - r \\ \underline{a = r} \end{matrix}$$

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$$\frac{x = r}{\rightarrow} \begin{matrix} ra^r + ra = \frac{r}{r} \\ ra^r + ra = 1 \end{matrix}$$

$$ra^r + ra - r = 0$$

$$r(a^r + 1 - r) = 0$$

$$r(a + r)(a - r) = 0$$

$$\underline{a = -r}$$

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