

$$r\left(\frac{\sqrt{r}}{r} + 1\right)^r - r\left(\frac{\sqrt{r}}{r} + 1\right)$$

$$\rightarrow r\left(\frac{r}{r} + 1 + \sqrt{r}\right) - r\sqrt{r} - r$$

$$\frac{r}{r} + \frac{r}{r} + \sqrt{r} - r\sqrt{r} = r - r$$

$$\frac{r}{r} - \frac{r}{r} = \boxed{-\frac{1}{r}}$$

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$$f(a) = \frac{a+1}{a-1} \quad \frac{a+1+a-1}{a-1} = a \times \frac{a+1-a+1}{a-1}$$

$$\frac{a+1}{a-1} + 1 = a \quad \frac{ra}{a-1} = a \times \frac{r}{a-1}$$

$$\frac{a+1}{a-1} - 1 \rightarrow a \neq 1$$

$$\boxed{a \in \mathbb{R} - \{1\}}$$

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$$g(a) = \sqrt{a^2 - 1}$$

$$f(x) \rightarrow a^2 - 1 - f(\sqrt{a^2 - 1}) = -r$$

$$a^2 - 1 - \sqrt{a^2 - 1} = -r \rightarrow (\sqrt{a^2 - 1} - r)^2 = 0$$

$$a^2 - 1 - \sqrt{a^2 - 1} + r = 0 \quad \sqrt{a^2 - 1} = r$$

$$\sqrt{a^2 - 1} = \sqrt{r}$$

$$a^2 - 1 = r$$

$$a^2 = r + 1$$

$$\boxed{a = \pm \sqrt{r+1}}$$

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$$f(x+r) = x^2 - 2x + r$$

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

$$x+r = -r$$

$$x = -r$$

$$f(r) = 1 - 2r + r = r$$

$$f(-r) = r^2 + 2r + r \rightarrow r^2$$

$$\left. \begin{matrix} f(r) = r \\ f(-r) = r^2 \end{matrix} \right\} x \Rightarrow \boxed{1 \leq r}$$

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$$f(\cos^2 x + \sin^2 x) = \tan^2 x \quad \frac{\sin^2 x}{\cos^2 x}$$

$$r^2 + 2r + 1 = r^2$$

$$x^2 \rightarrow 1 + r + 10t = v$$

$$1 + r + 10t - v = 0$$

$$\Delta = 100 - 4(-29) = 116$$

$$\boxed{f(10) = 10}$$

$$\tan^2 = 10$$

$$t = \frac{-10 \pm \sqrt{116}}{19} = \frac{1}{r}, \frac{-10 \pm \sqrt{116}}{19} \rightarrow \frac{1}{r} \rightarrow \frac{1}{r}$$

$$-1 \leq \cos \leq 1$$

$$\cos = \frac{1}{r} \quad \sin = \frac{\sqrt{r^2 - 1}}{r}$$

$$\tan = \frac{\sqrt{r^2 - 1}}{1}$$

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