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$$\frac{p}{z^n - 1} \quad z^n - 1 \neq 0 \quad z^n \neq 1 \rightarrow n \neq \log_z(p) \quad R - \{\log_z(p)\}$$

$$y = (z^{n+1})! \quad z^{n+1} = k \quad z^n = k-1 \rightarrow n = k-1$$

$$y = \left(\frac{p^n - 1}{p^n - 1} \right)! \quad \frac{p^n - 1}{p^n - 1} = k \quad p^n - 1 = k(p^n - 1) \rightarrow p^n - 1 = p^{kn}$$

$$n(p - 1k) = p - 1k \rightarrow a = \frac{p - 1k}{p - 1k} \quad k \geq 0$$

$$y = \frac{r}{\sin x - 1}$$

$$\sin x - 1 \neq 0 \rightarrow \sin x \neq 1 \rightarrow x \neq 2k\pi + \frac{\pi}{2} \quad \text{R} - \left\{ 2k\pi + \frac{\pi}{2} \right\}$$

$$y = \frac{r}{r \sin^2 x - 1}$$

$$r \sin^2 x - 1 \neq 0 \rightarrow \sin x \neq \pm \frac{\sqrt{r}}{r} \rightarrow \text{R} - \left\{ \frac{k\pi}{2} + \frac{\pi}{2} \right\}$$

$$\sqrt{r \sin x - 1} \rightarrow r \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{r} \quad x \in \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right]$$

$$\sqrt{\cos x - 1} \rightarrow \cos x \geq 1 \quad x = 2k\pi$$

$$\cos y = |x| - r \rightarrow -1 \leq |x| - r < 1 \rightarrow r < |x| < r+1$$

$$x \in [-r-1, -r] \cup [r, r+1] \quad x^2 + rx \leq 0 \rightarrow x(x+r) \leq 0 \rightarrow x \in [-r, 0]$$

$$y = \arcsin(x^2 + rx + 1) \quad x^2 + rx + 1 \geq -1 \rightarrow (x+r)(x+1) \geq 0$$

$$x \in (-\infty, -r] \cup [-1, +\infty) \quad \cap \rightarrow [-r, -r] \cup [-1, 0]$$

$$y = \sqrt{r - \log_p(x-r)} \rightarrow x-r > 0 \rightarrow x > r$$

$$r - \log_p(x-r) \geq 0 \rightarrow \log_p(x-r) \leq r \rightarrow x-r \leq r \rightarrow x \leq r+r = 2r$$

$$y = \log(x^2 - x) \rightarrow x^2 - x > 0 \rightarrow x(x-1) > 0 \rightarrow x \in (-\infty, 0) \cup (1, +\infty)$$

$$y = \frac{r}{x+1} \quad x+1 \neq 0 \rightarrow \mathbb{R}$$

$$y = \frac{\sqrt{x^2 - 4x}}{\sqrt{x^2 - x}}$$

$$x^2 - 4x \geq 0 \rightarrow x(x-4) \geq 0 \quad x \in (-\infty, 0] \cup [4, +\infty)$$

$$x^2 - x > 0 \rightarrow x(x-1) > 0$$

$$(x+1)(x-1)$$

$$(-1, 0) \cup (1, +\infty)$$

$$D_f = (1, +\infty)$$

$$y = \frac{\sqrt{x^3 - x}}{\sqrt{x^2 - x}}$$

$$x^3(x-1) \geq 0 \rightarrow x^2(x-1)(x+1) \geq 0$$

-	0	1	+
-	+	-	+
-	+	-	+

$$x(x-1)(x+1) > 0 \quad \mathbb{R}$$

$$y = \frac{x+1}{\sqrt{x+|x|}}$$

$$x+|x| > 0$$

$$x-x > 0 \times \quad x+x > 0 \quad (0, +\infty)$$

$$y = \frac{1}{\sqrt{x|x|}}$$

$$x|x| > 0$$

$$(0, \infty)$$

$$y = \sqrt{r-[x]} \rightarrow r-[x] \geq 0 \rightarrow [x] \leq r \quad x < r \quad (-\infty, r)$$

$$y = \frac{1}{\sqrt{r-[x]}} \rightarrow r-[x] > 0 \rightarrow [x] < r \quad (-\infty, r)$$

$$\sqrt{\left[x - \frac{1}{p}\right] + \left[x + \frac{1}{p}\right]} \geq 0$$

$$\left[x + \frac{1}{p} - 1\right] + \left[x + \frac{1}{p}\right] \geq 0$$

$$r\left[x + \frac{1}{p}\right] \geq 1$$

$$\left[x + \frac{1}{p}\right] \geq \frac{1}{r} \rightarrow \left[x + \frac{1}{p}\right] \geq \frac{1}{r} \rightarrow x + \frac{1}{p} \geq 1 \quad x \geq \frac{r-1}{p}$$

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

$$\sqrt{\left[x - \frac{1}{p}\right] + \left[x + \frac{1}{p}\right]} \geq \left[x - \frac{1}{p}\right] + \left[\frac{1}{p} - x\right] \geq 0$$

$$([x], [-x])$$

$$x \in \mathbb{Z} \rightarrow [x] + [-x] = 0$$

$$x \notin \mathbb{Z} \rightarrow [x] + [-x] = -1$$

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