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$$y = \frac{x+p}{(x^2-1)(x+p)(x-1)} \quad D_f = \{R - \{ -p, 1, \frac{1}{p} \} \}$$

$$\frac{x^2+p^2+x^2-1}{(x^2-1)(x+p)(x-1)} = \frac{x^2+p^2+x^2-1}{(x^2-1)(x+p)(x-1)}$$

$$\frac{x^2+p^2+x^2-1}{(x^2-1)(x+p)(x-1)} = \frac{x^2+p^2+x^2-1}{(x^2-1)(x+p)(x-1)}$$

$$y = \frac{x+p}{(x^2+1)(x+p)(x+1)} \quad D_f = \{R - \{ -p, -\frac{1}{p}, -1 \} \}$$

$$\frac{x^2+p^2+1}{(x^2+1)(x+p)(x+1)} = \frac{x^2+p^2+1}{(x^2+1)(x+p)(x+1)}$$

$$\frac{x^2+p^2+1}{(x^2+1)(x+p)(x+1)} = \frac{x^2+p^2+1}{(x^2+1)(x+p)(x+1)}$$

$$y = \frac{x+p}{(x^2-x+1)(x-1)} \quad D_f = \{R - \{ 1 \} \}$$

$$\frac{x^2+p^2+x^2-1}{(x^2-x+1)(x-1)} = \frac{x^2+p^2+x^2-1}{(x^2-x+1)(x-1)}$$

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$$\Delta < 0 \quad b^2 - 4ac = (-1)^2 - 2(1)(1) = 1 - 2 = -1 < 0$$

$$y = \frac{x+p}{(x^2-x+1)(x-1)} \quad D_f = (-\infty, -p] \cup (1, +\infty)$$

$$\frac{x^2+p^2+x^2-1}{(x^2-x+1)(x-1)} = \frac{x^2+p^2+x^2-1}{(x^2-x+1)(x-1)}$$

$$\frac{x^2+p^2+x^2-1}{(x^2-x+1)(x-1)} = \frac{x^2+p^2+x^2-1}{(x^2-x+1)(x-1)}$$

$$y = \frac{p}{x^2-\omega(x-1)-p(x+\omega)} \quad x^2-\omega(x-1)-p(x+\omega) = (x-1)(x-\omega) \neq 0 \quad x \geq 1$$

$$x^2+\omega x-\omega-x+\omega = x^2+p x = x(x+p) \neq 0 \quad x \leq 1 \quad D_f = \{R - \{ -p, 0, 1, \omega \} \}$$

$$y = \sqrt{x^2-1} \quad [-x], -x \geq 0 \quad [-x] \geq 1 \quad -x \geq 1 \quad x \leq -1$$

$$D_f = (-\infty, -1]$$

$$y = \frac{\omega x^2 + 4}{[x]^2 - 2[x] - 4} \quad ([x] + 1)([x] - 4) \quad [x] = -1 \quad [x] = 4$$

$$0 < x < 1 \quad 1 \leq x < 2$$

$$D_f = \{ (0, -1], [4, \infty) \}$$

$$y = \sqrt{[x-\frac{1}{p}] + [x+\frac{p}{p}]} \quad [x+\frac{p}{p}-1] + [x+\frac{p}{p}] \geq 0 \quad [x+\frac{p}{p}]-1 + [x+\frac{p}{p}] \geq 0$$

$$D_f = [\frac{1}{p}, \infty)$$

$$2[x+\frac{p}{p}] \geq 1 \quad [x+\frac{p}{p}] \geq \frac{1}{2} \quad x+\frac{p}{p} > 1 \quad x > \frac{1}{p}$$

$$y = \sqrt{[x-\frac{1}{p}] + [x-\frac{p}{p}]} \quad [x-\frac{1}{p}] + [-x+\frac{p}{p}] \geq 0 \quad a \in \mathbb{Z} \quad -0 \checkmark$$

$$D_f = \{ x | x = k + \frac{1}{p}, k \in \mathbb{Z} \}$$

$$a \notin \mathbb{Z} \quad -1 \times$$

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sin cos
cos
sin
sin

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$$\text{Q1) } y = \frac{\cos 2x + 1}{2 \sin x + 1} \quad \begin{array}{l} 2 \sin x + 1 \neq 0 \quad 2 \sin x = -1 \neq k\pi - \frac{\pi}{2} \\ \sin x \neq 0 \neq k\pi \\ \cos 2x \neq 0 \quad x \neq \frac{k\pi}{2} \end{array}$$

$$Df = \mathbb{R} - \left(\left\{ k\pi - \frac{\pi}{2} \right\} \cup \left\{ \frac{k\pi}{2} \right\} \right)$$

$$\text{Q2) } y = \sqrt{1 - \epsilon \sin x} \quad \begin{array}{l} 1 - \epsilon \sin x \geq 0 \quad -\epsilon \sin x \geq -1 \quad \epsilon \sin x \leq 1 \quad \epsilon \sin x \leq 1 \quad \epsilon \sin x \leq 1 \\ \epsilon \sin x \leq 1 \end{array}$$

$$Df = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$$



$$\epsilon \sin x \leq 1$$

$$\text{Q3) } \sqrt{r \sin x} - 1 \geq 0 \quad r \sin x \geq 1 \quad \sin x \geq \frac{1}{r} \quad Df = \left[k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right]$$

$$\text{Q4) } \sqrt{1 - r \cos x} \geq 0 \quad 1 - r \cos x \geq 0 \quad \cos x \leq \frac{1}{r} \quad Df = \left[k\pi + \frac{\pi}{3}, k\pi + \frac{5\pi}{3} \right]$$

$$\text{Q5) } y = \arcsin(x^2 + 4x + 1) \quad \begin{array}{l} -1 \leq x^2 + 4x + 1 \leq 1 \\ -1 \leq x^2 + 4x \leq 0 \\ x^2 + 4x \leq 0 \quad x(x+4) \leq 0 \quad \frac{x}{0} \quad \frac{-4}{+} \end{array}$$

$$x^2 + 4x + 1 \geq 0 \quad (x+1)(x+3) \geq 0 \quad \frac{x}{0} \quad \frac{-1}{+} \quad \frac{-3}{-} \quad Df = [-3, -1] \cup [-1, 0]$$

$$\text{Q6) } y = \sqrt{\omega - r x} \geq 0 \quad -1 \leq \sqrt{\omega - r x} \leq 1 \quad \omega - r x \leq 1 \quad \omega - r x \geq 0 \quad \omega - r x \geq 0 \quad \omega - r x \geq 0$$

$$r \leq x \leq r\omega \quad Df = [r, r\omega]$$

$$\text{Q7) } y = \log_r(1 - 108^x) \quad \begin{array}{l} x > 0 \\ 1 - 108^x > 0 \quad -108^x > -1 \quad \log_r 1 < 1 \quad x < \frac{1}{r} \end{array} \quad Df = (0, \frac{1}{r})$$

$$\text{Q8) } y = \log_4(1 - 108^x) \quad \begin{array}{l} x > 0 \\ 1 - 108^x > 0 \quad -108^x > -1 \quad \log_4 1 < 1 \quad x < \frac{1}{4} \end{array} \quad Df = (0, \frac{1}{4})$$

$$y = \sqrt{r^x - 2x} \geq 0 \quad r^x - 2x \geq 0 \quad r^x \geq 2x \quad r^x - 2x \geq 0 \quad r^x - 2x \geq 0 \quad r^x - 2x \geq 0$$

$$\frac{x}{0} \quad \frac{1}{+} \quad \frac{r}{+} \quad Df = [1, r]$$

$$y = \left(\frac{r^x + \omega}{r^x + \epsilon} \right) \quad \begin{array}{l} \frac{r^x + \omega}{r^x + \epsilon} \in \mathbb{R} \quad r^x + \omega = r^x + \epsilon \omega + \epsilon \omega \quad r^x - r^x \omega \neq \epsilon \omega - \omega \\ x = \frac{r^x + \omega}{r^x - r} \end{array}$$

$$Df = \left\{ x \mid x = \frac{\omega - r}{r^x - r}, \quad r \in \mathbb{R} \right\}$$

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