

الف) $y = \sqrt{\frac{x(x-4)}{x(x^2-2x+1)}}$

$\sqrt{\frac{x(x-4)}{x(x-1)(x+1)}}$

$\frac{-1}{-1} + \frac{0}{0} + \frac{+1}{+1} + \frac{-1}{-1} + \frac{0}{0} + \frac{+1}{+1}$

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$\Rightarrow y = \sqrt{\frac{x^2(x-1)}{x(x^2-1)}}$

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

$\frac{+1}{+1} + \frac{0}{0} + \frac{+1}{+1} + \frac{+1}{+1} + \frac{0}{0} + \frac{+1}{+1}$

LVD

$IR = \{0, +1, -1\}$

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

$\sqrt{x+|x|}$

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

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الف) $y = \sqrt{y - [x]}$

$y - [x] \geq 0$

$y \geq [x]$

$D_f = (\cancel{y}, \infty)$

LVD

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ب) $\frac{1}{\sqrt{y - [x]}}$

$y - [x] > 0$

$D_f = (\cancel{y}, \infty)$

الف) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right]}$

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

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

ب) $\sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]}$

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$x - \frac{1}{x} \in \mathbb{Z}$

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

$D_f = \left[\frac{1}{x}, +\infty\right)$

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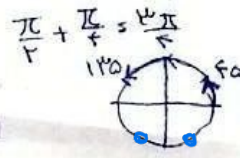
الف) $y = \frac{r}{\sin x - 1}$

$-1 \leq \sin x - 1 \leq +1$



$D_f = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}\right\}$

$0 \leq \sin x \leq r$



LVD

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

$D_f = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\right\}$

$k\pi \pm \frac{\pi}{2}$

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$\left(\frac{1}{r}\right) \rightarrow \frac{1}{r} = \frac{1}{r}$

$$y = \sqrt{r \sin x - 1} \quad r \sin x - 1 \geq 0 \quad \sin x \geq \frac{1}{r}$$

$$D_f = \left[r k \pi + \frac{\pi}{2}, r k \pi + \frac{3\pi}{2} \right] \quad k \in \mathbb{Z}$$


$$y = \sqrt{\cos x - 1} \quad \cos x - 1 \geq 0$$

$$D_f = \{ r k \pi \mid k \in \mathbb{Z} \}$$


$$\cos y = |x| - r \quad r \leq |x| \leq r$$

$$-1 \leq |x| - r \leq +1$$

$$D_f = [-r, -r] \cup [r, r]$$

$$y = \arcsin(r x + r x + 1)$$

$$-1 \leq r x + r x + 1 \leq +1$$

$$r x + r x + 1 \leq 0$$

$$r x + r x + 1 \geq 0$$

$$D_f = [-r, -r] \cup [r, r]$$

$$r - \log(r - r) \geq 0$$

$$\log(r) \leq r$$

$$r - r \leq 9$$

$$r \leq 11$$

$$r < x \leq 11 \quad D_f = (r, 11]$$

$$b) \log(r^x - x)$$

$$r^x - x > 0$$

$$x(r^x - 1) > 0$$

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

$$a) D_f = \mathbb{R} \quad r^x + 1 > 0$$

$$b) D_f = \mathbb{R} - \{0\} \quad r^x - 1 \neq 0 \quad r^x \neq 1 \quad x \neq 0$$

$$c) D_f = \mathbb{R} - \log(r)$$

$$r^x - r \neq 0 \quad r^x \neq r$$

$$d) r^x - r \neq 0 \quad D_f = \mathbb{R} - \log(r)$$

$$r x + 1 \in W \quad x \in \frac{W-1}{r} \quad \{x \mid x = \frac{k-1}{r}, k \in W\}$$

$$\frac{r x - r}{r x - r} \in W$$

$$r x - r \in W$$

$$\{x \mid x \in \frac{-\omega k + r}{r - r k}, k \in W\}$$

$$x \in \frac{-\omega W + r}{r - r W}$$