

$$1) \quad \begin{array}{r} x^2 + rx - rx + r \\ -rx^2 + rx^2 \\ \hline dx^2 - rx + r \end{array} \quad \begin{array}{r} x-1 \\ rx^2 + dx - r \\ \hline (x^2 + dx + r)(x-1) \end{array} \quad \begin{array}{r} x+r \\ (x^2 + dx + r)(x+1) \end{array}$$

$$dx^2 - rx + r$$

$$-dx^2 + dx$$

$$-rx + r$$

$$+rx + r$$

0

$$x^2 + dx + r \rightarrow x^2 + dx + 4 = (x-1)(x+4)$$

$$D_f = R - \left\{ \frac{1}{r}, -r, 1 \right\}$$

$$2) \quad \begin{array}{r} x^2 + 9x^2 + 10x + r \\ -x^2 + r \\ \hline 9x^2 + 10x + r \end{array} \quad \begin{array}{r} x+1 \\ x^2 + vx + r \\ \hline (x^2 + vx + r)(x+1) \end{array} \quad \begin{array}{r} x+r \\ (x^2 + vx + r)(x+1) \end{array}$$

$$9x^2 + 10x + r$$

$$-9x^2 + vx$$

$$9x + r$$

$$-9x + r$$

0

$$x^2 + vx + 4 = (x+1)(x+4)$$

$$D_f = R - \left\{ -\frac{1}{r}, -r, -1 \right\}$$

$$3) \quad \begin{array}{r} x^2 - rx + rx - 1 \\ -x^2 + r \\ \hline -x^2 + rx - 1 \\ +x^2 + r \\ \hline x - 1 \end{array} \quad \begin{array}{r} x-1 \\ x^2 - x + 1 \\ \hline x+r \\ (x-1)(x^2 - x + 1) + 0 \end{array} \quad \begin{array}{r} x+r \\ (x-1)(x^2 - x + 1) + 0 \end{array}$$

$$D_f = R - \{1\}$$

$$4) \quad \frac{x+r}{x^2 - rx + rx - 1} \geq 0 \rightarrow \frac{x+r}{(x-1)(x-x+1)} \geq 0 \rightarrow \frac{-r}{1-d-\frac{1}{x}+}$$

$$D_f = (-\infty, -r] \cup (1, +\infty)$$

r

$$x-1 > 0 \quad \boxed{x > 1}$$

$$x-1 < 0 \quad \boxed{x < 1}$$

$$x^2 - d(1-x) - rx + d < x^2 - vx + 0$$

$$\begin{array}{l} \text{if } x > 0 \\ \rightarrow x^2 - dx + d - rx + d < x^2 - vx + 0 \end{array} \quad \begin{array}{l} D_f = R - \{r, d\} \\ (x-r)(x-d) \end{array}$$

$$\begin{array}{l} \text{if } x < 1 \\ \rightarrow x^2 - d(1-x) - rx + d < x^2 - d + dx - rx + d < x^2 + rx \end{array} \quad \begin{array}{l} D_f = R - \{0, -r\} \\ D_f = R - \{-r, 0, r, d\} \end{array}$$

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

$$\Rightarrow [x]^r - r[x] - r \geq 0$$

$$[x] = 1 \quad [-1, 0)$$

$$[x] + t \quad t^r - r + r^2 \geq 0 \quad (t+1)(t-r) \geq 0$$

$$t \geq -1 \quad \text{or} \quad t \geq r$$

$$[x] = r \quad [r, +\infty)$$

$$R = \{[-1, 0) \cup [r, +\infty)\}$$

-d

$$\omega) [x - \frac{1}{r}] + [x + \frac{r}{r}] \geq 0 \quad [x - \frac{1}{r}] + 1 + [x + \frac{r}{r}] \geq 1$$

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

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

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

$$[x + \frac{r}{r}] \geq 1 \quad [x \geq \frac{1}{r}]$$

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

$$\Rightarrow [x - \frac{1}{r}] + [\frac{1}{r} - x] \geq 0 \quad [x - \frac{1}{r}] + [- (x - \frac{1}{r})] \geq 0$$

$$a \in \mathbb{Z} \quad [0] + [-a] \geq 0$$

$$a \notin \mathbb{Z} \quad [a] + [-a] = -1$$

$$x = \frac{1}{r} \in \mathbb{Z}$$

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

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$$\omega) \tan x \neq -1 \quad x \neq \frac{r\pi}{r}, \frac{r\pi}{r}$$

$$\sin x \neq 0 \rightarrow x \neq 0, r\pi, \pi$$

$$\cos x \neq 0 \rightarrow x \neq \frac{\pi}{r}, \frac{r\pi}{r}$$

$$D_f \subset \mathbb{R} = \left\{ \frac{k\pi}{r}, k\pi - \frac{\pi}{r} \right\}$$

$$\Rightarrow 1 - \sin^2 x \geq 0 \quad \sin^2 x \leq 1$$

$$\sin^2 x \leq \frac{1}{r^2} \quad -\frac{1}{r} \leq \sin x \leq \frac{1}{r}$$

$$D_f = [k\pi - \frac{\pi}{r}, k\pi + \frac{\pi}{r}]$$

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

$\omega)$

$$D_f = [rk\pi + \frac{\pi}{r}, rk\pi + \frac{\pi}{r}]$$

$$\omega) 1 - r \cos x \geq 0 \quad r \cos x \leq 1 \quad \cos x \leq \frac{1}{r}$$

$$D_f = [rk\pi + \frac{\pi}{r}, rk\pi + \frac{\pi}{r}]$$

$$\omega) -1 \leq x^r + r x + 1 \leq 1$$

$$0 \leq x^r + r x + r$$

$$x^r + r x \leq 0$$

$$x(x+r) \leq 0$$

$$\frac{-r}{+b-b+}$$

$$D_f = [-r, -r], [-1, 0]$$

$$\frac{-r}{+b-b+} \quad \frac{-1}{+b-b+}$$

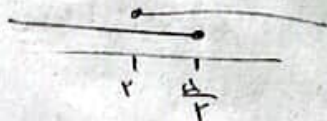


4,

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

$$0 \leq d - r x$$

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



$$D_f = [r, \frac{d}{r}]$$

$$\omega) 1 - \log_r x > 0$$

$$\log_r x < 1$$

$$x > 0 \quad x \leq r$$

$$D_f = (0, r]$$

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$$\omega) 1 - \log_{\frac{1}{r}} x > 0$$

$$\log_{\frac{1}{r}} x < 1$$

$$x > \frac{1}{r} \quad x > 0$$

$$D_f = (\frac{1}{r}, +\infty)$$

$$f x - x^r$$

$$f x - x^r \geq r$$

$$f x - x^r \geq r$$

$$x^r - f x + r \leq 0$$

$$(x-1)(x-r) \leq 0$$

$$\frac{1}{r} \quad \frac{r}{+b-b+}$$

$$D_f = [1, r]$$

$$\omega) \frac{r x + d}{r x + f} \in W$$

$$r x + d \in r x W + f W$$

$$r x - r x W \in f W - d$$

$$x(r - r W) \in f W - d$$

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

$$D_f = \{x \mid x \in \frac{-f k + d}{r k - r}, k \in W\}$$