

۲. آخرین عالی نوشتن

۱. $x^3 + 3x^2 - 11x + 3 \mid x-1$ $x+3$

$$\begin{array}{r} x^3 + 3x^2 - 11x + 3 \\ - (x^3 + x^2 - 3x + 3) \\ \hline 2x^2 - 8x + 0 \end{array}$$

$(x^3 + x^2 - 3x + 3)(x-1)$

$$2x^2 - 8x + 0$$

$$- (2x^2 + 4x - 6)$$

$$-12x + 6$$

$$+ (12x + 6)$$

0

$$x^3 + 3x^2 - 11x + 3 = (x-1)(x+4)$$

$$D_f = R - \left\{ \frac{1}{4}, -3, 1 \right\}$$

۲) $x^3 + 9x^2 + 10x + 3 \mid x+1$ $x+3$

$$\begin{array}{r} x^3 + 9x^2 + 10x + 3 \\ - (x^3 + x^2 + 3x + 3) \\ \hline 8x^2 + 7x + 0 \end{array}$$

$(x^3 + x^2 + 3x + 3)(x+1)$

$$8x^2 + 7x + 0$$

$$- (8x^2 + 12x + 6)$$

$$-5x - 6$$

$$+ (5x + 6)$$

0

$$x^3 + 9x^2 + 10x + 3 = (x+1)(x+4)$$

$$D_f = R - \left\{ -\frac{1}{4}, -3, -1 \right\}$$

۳) $x^3 - 7x^2 + 2x - 1 \mid x-1$ $x+3$

$$\begin{array}{r} x^3 - 7x^2 + 2x - 1 \\ - (x^3 - x^2 - x + 1) \\ \hline -6x^2 + 3x - 2 \end{array}$$

$(x^3 - x^2 - x + 1)(x-1)$

$$-6x^2 + 3x - 2$$

$$+ (6x^2 + 18x + 18)$$

$x-1$

$$(x-1)(x^2 - x + 1)$$

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

۴) $\frac{x+3}{x^3 - 7x^2 + 2x - 1} \geq 0 \rightarrow \frac{x+3}{(x-1)(x^2 - x + 1)} \geq 0$ $\frac{-3}{1} + \frac{1}{1} + \frac{1}{1}$

$$D_f = (-\infty, -3] \cup (1, +\infty)$$

۵.

$$x^3 - d(1-x) - rx + d$$

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

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

if $x > 0$ $x^3 - dx + d - rx + d = x^3 - vx + 0$ $D_f = R - \{r, d\}$

$(x-r)(x-d)$

if $x < 1$ $x^3 - d(1-x) - rx + d = x^3 - d + dx - rx + d = x^3 + vx$ $D_f = R - \{0, -v\}$

$D_f = R - \left\{ -\frac{v}{0}, r, d \right\}$

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

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

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

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

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

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

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

-d

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

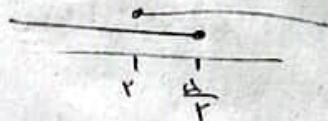


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$$0 \leq d - r x \leq +1$$

$$0 \leq d - r x$$

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



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

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

$$\log_r x < 1$$

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

$$D_f = (0, r]$$

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

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

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

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

$$\frac{f x - x^r}{r} - 1 \geq 0$$

$$\frac{f x - x^r}{r} \geq r$$

$$f x - x^r \geq r^2$$

$$x^r - f x + r^2 \leq 0$$

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

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

$$D_f = [1, r]$$

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

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

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

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

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

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