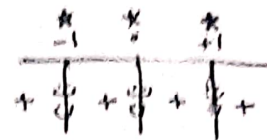


$$\frac{x(x-2)}{x(x-1)(x+1)} \geq 0$$



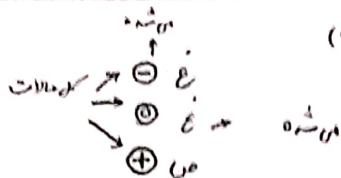
$$D_f = (-1, 0) \cup (0, 1) \cup [2, +\infty)$$

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



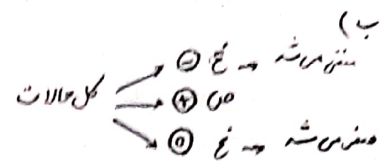
$$D_f = \mathbb{R} - \{-1, 0, 1\}$$

$$x + |x| > 0$$



$$D_f = \mathbb{R}^+$$

$$x|x| > 0$$



$$D_f = \mathbb{R}^+$$

$$2 - [x] \geq 0$$

$$\Rightarrow [x] \leq 2 \Rightarrow x < 3$$



$$D_f = (-\infty, 3)$$

$$2 - [x] > 0$$

$$\Rightarrow [x] < 2 \Rightarrow x < 2$$



$$D_f = (-\infty, 2)$$

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

$$2\left[x - \frac{1}{x}\right] \geq -1 \quad \left[x - \frac{1}{x}\right] \geq -\frac{1}{2}$$

$$x - \frac{1}{x} \geq 0 \quad x > \frac{1}{x} \Rightarrow$$

$$D_f = \left[\frac{1}{2}, +\infty\right)$$

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

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

$$\sin x - 1 \neq 0$$

$$\sin x \neq 1$$

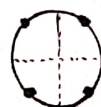


$$D_f = \mathbb{R} - \left\{2k\pi + \frac{\pi}{2}\right\}$$

$$r \sin^2 x - 1 \neq 0$$

$$r \sin^2 x \neq 1$$

$$\sin^2 x \neq \frac{1}{r} \Rightarrow \sin x \neq \pm \frac{\sqrt{r}}{r}$$



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

$$r \sin x = 1 \Rightarrow$$

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



$$D_f = \left[r k \pi + \frac{\pi}{6}, r k \pi + \frac{5\pi}{6} \right]$$

(ب)

$$\cos x = 1 \Rightarrow$$

$$\cos x \geq 1 \Rightarrow \begin{cases} \cos x > 1 \notin \\ \cos x = 1 \end{cases}$$



$$D_f = \{ r k \pi \}$$

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$$-1 \leq |n| - r \leq 1$$

$$r \leq |n| \leq r$$

$$-r \leq n \leq -r$$

$$r \leq n \leq r$$

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

(ب)

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

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

$$\Rightarrow (x+1)(x+r) = -1, -r$$

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

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$$x - r > 0 \quad x > r$$

$$r - \log(x-r) \geq 0 \Rightarrow \log(x-r) \leq r$$

$$x - r \leq 9$$

$$x \leq 11$$

$$\Rightarrow D_f = (r, 11]$$

(ب)

$$x^r - x > 0$$

$$x(x+1)(x-1) > 0$$

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

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

(ب)

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$$D_f = \mathbb{R}$$

(ب)

$$e^x - 1 \neq 0 \Rightarrow e^x \neq 1 \Rightarrow x \neq 0$$

$$D_f = \mathbb{R} - \{0\}$$

(ب)

9

$$e^x - r \neq 0 \quad e^x \neq r \quad x \neq \frac{1}{r}$$

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

(ب)

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

$$D_f = \mathbb{R} - \log_e r$$

(ب)

$$f_{n+1} \in W$$

$$f_n \in W - 1$$

$$n \in \frac{W-1}{r}$$

$$D_f = \left\{ n \mid n \in \frac{W-1}{r} \right\}$$

(ب)

$$\frac{r_n - r}{r_n - a} \in W \Rightarrow r_n - r = r_n W - a W$$

$$r_n - r W n = r - a W \Rightarrow n = \frac{r - a W}{r - r W}$$

$$D_f = \left\{ n \mid n = \frac{a k - r}{r k - r} \right\}$$

(ب)

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