

ضرب x^2 منبسط $\rightarrow a=2$

$$2x+b \geq 0 \quad x \geq -\frac{b}{2} \quad -\frac{b}{2} = 3 \quad \boxed{b = -6}$$

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$$\begin{aligned} x^2 + 2x + 2 - m^2 &\leq 0 & 4 - 4(2 - m^2) &\leq 0 \\ (2 - m^2) &\geq 1 & m^2 &\leq 1 \quad -1 \leq m \leq 1 & 1 - (-1) &= 2 \end{aligned}$$

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$[x] + [-x] \rightarrow \begin{cases} x \text{ عضو } \mathbb{Z} \text{ نباشد} \rightarrow -1 \\ x \in \mathbb{Z} \rightarrow 0 \end{cases}$

$$\sqrt{4-x^2} \rightarrow 4-x^2 \geq 0 \quad x^2 \leq 4 \quad -2 \leq x \leq 2$$

$$x = \{-2, -1, 0, 1, 2\}$$

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$x^2(x+2) \geq 0$ $\frac{-2 \quad 0}{-\phi \quad + \quad \phi \quad +}$ $x = [-2, +\infty)$ (ان)

$\frac{x^2(x-1)(x+1)(x-2)}{(x-1)(x^2+x+1)} \geq 0$ $\frac{-2 \quad -1 \quad 0 \quad 1 \quad 2}{+ \quad \phi \quad - \quad \phi \quad - \quad \phi \quad +}$ $x = (-\infty, 1] \cup \{0\} \cup [2, +\infty)$ (ب)

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الف) $|x-2| - 3 \geq 0 \quad |x-2| \geq 3 \quad x-2 \geq 3 \quad \boxed{x \geq 5}$

$x-2 \leq -3 \quad \boxed{x \leq -1} \quad x = (-\infty, -1] \cup [5, +\infty)$

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ب) $4 - |2-x| \geq 0 \quad |2-x| \leq 4 \quad -4 \leq 2-x \leq 4$

$-6 \leq -x \leq 2 \rightarrow -2 \leq x \leq 6 \quad D_x = [-2, 6]$

~~Exercise~~ a) ① $1-x^r \geq 0$ $x^r \leq 1$ $-1 \leq x \leq 1 \Rightarrow 0 \leq x \leq 1$
 $x \geq 0$

② $x \leq 0 \rightarrow 1+x^r \geq 0 \rightarrow x \in \mathbb{R} \Rightarrow ① \cup ② \Rightarrow D_{x^2}(-\infty, 1]$

b) $r|x-1| \geq 0$ $|x-1| \leq r$ $-r \leq x-1 \leq r$ $r \leq x \leq 1+r$

$r|x-1| \neq 1$ $|x-1| \neq \frac{1}{r}$ $x \neq 1 \pm \frac{1}{r}$ $D_{x^2}[r, 1+r] - \{1 \pm \frac{1}{r}\}$

$\cos x \neq 0$ $x \neq k\pi + \frac{\pi}{2}$ $D_x = \{k\pi + \frac{\pi}{2} \mid k \in \mathbb{Z}\}$

b) $r \cos x - 1 \neq 0$ $\cos x \neq \frac{1}{r}$

$x \neq r k \pi \pm \frac{\pi}{r}$ $D_x = \{r k \pi \pm \frac{\pi}{r} \mid k \in \mathbb{Z}\}$

a) $(rx+1)^r \neq (x+r)^r$ $r x^{r+1} + r x \neq x^{r+1} + r + r x$

$r x^r - r x - 1 \neq 0$ $x^r - r x - r \neq 0$ $(x-r)(x+r) \neq 0$
 $x = r$ $x = -\frac{r}{r}$ $D_x = \mathbb{R} - \{r, -\frac{r}{r}\}$

b) $|rx+1| \geq |x+r|$ $(rx+1)^r \geq (x+r)^r$ $r x^r - r x - 1 \geq 0$
 $(x+\frac{r}{r})(x-r) \geq 0$ $\frac{-\frac{r}{r}}{+ \frac{r}{r} - \frac{r}{r}}$ $D_x = (-\infty, -\frac{r}{r}] \cup [r, +\infty)$

① $rx-1 > 0$ $x > \frac{1}{r}$

② $\log_a^{rx-1} > 0$ $rx-1 > 1$ $x > 1$

③ $\log_{\frac{1}{r}} \log_a^{rx-1} \geq 0$ $\log_a^{rx-1} \leq 1$ $rx-1 \leq 0$ $x \leq \frac{1}{r}$
 $1 < x \leq r$

① $r \cos x + 1 > 0$ $\cos x > -\frac{1}{r}$ $D_x = (rk\pi - \frac{r\pi}{r}, rk\pi + \frac{r\pi}{r})$ (a)

~~Exercise~~

① $\frac{x-1}{x+1} > 0$ $\frac{-1}{+ \frac{r}{r} - \frac{r}{r}}$

$\Rightarrow ① \cap ② \Rightarrow x \leq -1 = (-\infty, -1)$ (b)

② $\log \frac{x-1}{x+1} > 0$ $\frac{x-1}{x+1} > 1$ $\frac{-r}{x+1} > 0$ $x+1 < 0$ $x < -1$