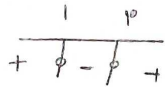


برای حل

۲۰

روش اولی

$$x^r - ax + b$$



$$\begin{aligned} d=1 &\Rightarrow 1-a+b=0 \\ d=r &\Rightarrow r-a+b=0 \\ \hline \Lambda -ra &= 0 \\ a &= r \end{aligned}$$

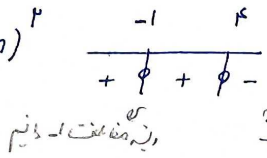
$$\Rightarrow a+b = 1+r = \sqrt{\quad}$$

۵-۱

۵-۲

$$y = ((k-r)x + m-1)(x-rn)^r$$

$$\frac{m}{n} + k = ?$$



$$\begin{aligned} (k-r)x + m-1 &= 0 \\ rk - r + m - 1 &= 0 \\ m + rk &= 1 \end{aligned}$$

$$\begin{aligned} -1 - rn &= 0 \\ -1 &= rn \\ \frac{-1}{r} &= n \end{aligned}$$

$$k=1 \Rightarrow (-x+r)(x+1)^r$$

$$\begin{aligned} m + rk &= 1 \\ k=1 &\rightarrow m=0 \\ k=r &\rightarrow m=1 \end{aligned}$$

$$\Rightarrow \frac{0}{1} + 1 = 1 \Rightarrow -1+1 = \boxed{-1}$$

۵-۳

$$y = -\frac{1}{r}x^r + rx + y \Rightarrow \frac{x-r}{r} \Rightarrow x^r - rx - 1 \leq -v$$

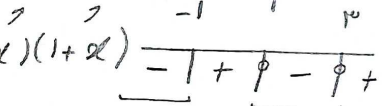
$$\Rightarrow (-1, \infty) \Rightarrow b-a \Rightarrow \Delta + 1 = \boxed{2}$$

۵-۴

$$f(x) = x^r - rx + 1 \quad x > 0$$

$$-x^r(-x+r) + (-x+r) = (-x+r)(1-x^r) = (-x+r)(1-x)(1+x)$$

در صورتی که $x > 1$ به $x < 1$ تبدیل می شود



$$0 < x < 1 \Rightarrow \text{نقطه } (1, 1)$$

$$\leftarrow r = \frac{1+r}{r}$$

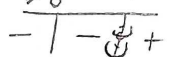
$$f(r) = r - r^2 + 1 = \boxed{-1}$$

$$(a-1)x^r + (a-1)x + 1$$

در صورتی که $a = 1$ به $a > 1$ تبدیل می شود

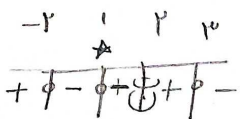
$$\frac{m(m^r+m)}{m-r} > 0$$

$$\begin{aligned} m^r+m &= 0 \\ m(m^r+1) &= 0 \Rightarrow m=0 \end{aligned} \Rightarrow m = (r, \infty)$$



$$\frac{(x^r-x-r)(x-1)^r}{(x^r+x+1)(r-x)^r} < 0$$

$$\frac{(x-r)(x+r)(x-1)^r}{(r-x)^r} < 0$$



$$m \in (-r, r) \cup (r, \infty)$$

$$\Delta = 1 - r = -r$$

$$f(x) = \frac{rx^r - rx}{x^r + r} - \frac{rx^r - rx}{x^r + r} - r < 0 \Rightarrow \frac{rx^r - rx - r}{x^r + r} < 0$$

$$(a, b)$$

$$y = r \Rightarrow \frac{rx^r - rx - r}{x^r + r} < 0 \Rightarrow \frac{rx^r - rx - r}{x^r + r} < 0 \Rightarrow b-a = r-r = \boxed{0}$$

۵-۵

$$-1 < \frac{x^2 - x}{x+1} < 0$$

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

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

$$0 < \frac{x^2 - x}{x+1} < 0$$

$$\begin{array}{c} -1 \quad 0 \quad \frac{1}{x} \\ | \quad | \quad | \\ - \oplus + \ominus - \oplus + \end{array}$$

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

//
نوبت اولی =

⇒

$$-1 < \frac{x^2 - x}{x+1} \Rightarrow 0 < \frac{x^2 - x + x + 1}{x+1} \Rightarrow$$

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

$$\cup$$

$$(-\infty, -1) \cup (0, \frac{1}{x}) \cap$$

9

9

9

$$\frac{x^2 - 1}{x} \leq 0 \Rightarrow$$

$$\frac{x^2 - 1}{x} \leq 0 \Rightarrow$$

$$\frac{x^2 - 1}{x} \leq 0$$

$$\begin{array}{c} -1 \quad 0 \quad 1 \\ | \quad | \quad | \\ - \oplus + \ominus - \oplus + \end{array}$$

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

$$x = (-\infty, -1] \cup (0, +\infty]$$