

$$k(x-1)(x-r) = x^2 - ax + B \quad \left. \begin{array}{l} a=r \\ b=r \end{array} \right\} \Rightarrow a+B=V \quad \checkmark$$

$$\Rightarrow k=1 \Rightarrow x^2 - rx + r$$

+	-	+
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x	$\frac{-1}{r}$	r
p	+	+
	-	-

$$((k-r)x+m-1)(x-r_n)^r$$

$$-1 \rightarrow \text{...} \rightarrow -1 - r_n = 0 \Rightarrow r_n = -1 \Rightarrow n = -\frac{1}{r}$$

$$k=1 \Rightarrow (\emptyset \leftarrow x \rightarrow f(x))$$

$$-x+m-1 \Rightarrow -r+m-1=0 \Rightarrow m=r$$

$$\frac{m}{n} + k = \frac{r}{-\frac{1}{r}} + 1 = -r+1 = -1 \quad \checkmark$$

$$-\frac{1}{r}x^2 + rx + r > \frac{V}{r} \Rightarrow -\frac{1}{r}x^2 + rx + \frac{a}{r} \Rightarrow x^2 - rx - a < 0$$

-1	a
+	-

$$(-1 \quad a) \Rightarrow (b-a) = a - (-1) = a+1 \quad \checkmark$$

-1	a
+	-

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

$$(x-r)(x+1)(x-1) < 0$$

-1	1	r
-	+	-
+	-	+

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

$$\text{max } f(r) = 1 - 1r - r + r = -r \quad \checkmark$$

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

① $a-1 < 0 \Rightarrow a < 1$

② $\Delta < 0 \Rightarrow a^2 - 4a + 1 - 4a + 4 < 0 \Rightarrow a^2 - 8a + 5 < 0 \Rightarrow (a-1)(a-5) < 0$

$$1 < a^2 \Rightarrow \emptyset$$

1	a
+	-

$$a < a < a$$

$$\frac{m(m(m^r+1))}{m-r} = \frac{m^r(m^r+1)}{m-r} > 0 \quad \Delta < 0 \quad -4$$

m	0	r
-	*	-
-	-	+

$r < m$ ✓

(4)

$$\frac{(x-r)(x+r)(x-1)^r}{(x^r+x+1)(r-x)^r} \leq 0 \quad \frac{(x-r)(x+r)(x-1)^r}{(x^r+x+1)(r-x)^r} \quad -5$$

or $(x-r)(x+r)(x-1)^r \leq 0 \Rightarrow \Delta < 0$

-r	1	r	r
+	-	-	+

$\Rightarrow [r, +\infty)$

$\rightarrow [-r, r] \cup [r, +\infty)$

(1)

$$\frac{rx^r - rx}{x^r + r} < r \Rightarrow \frac{rx^r - rx}{x^r + r} - r < 0 \Rightarrow \frac{rx^r - rx - r(x^r + r)}{x^r + r} < 0 \quad -6$$

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

-r	r
+	-
+	+

$\Rightarrow (-r, r) \Delta < 0 \rightarrow r - (-r) = 2r$

(2)

$$-1 < \frac{rx^r - rx}{x+1} < 0 \quad \textcircled{1} \quad \frac{rx^r - rx}{x+1} + \frac{x+1}{x+1} > 0 \quad -7$$

$$\Rightarrow \frac{rx^r - rx + x + 1}{x+1} > 0 \Rightarrow \frac{-1}{x+1} > 0 \Rightarrow (-1, +\infty)$$

$$\textcircled{2} \quad \frac{rx^r - rx}{x+1} < 0 \Rightarrow \frac{x(rx - r)}{x+1} < 0 \Rightarrow \frac{-1}{x+1} > 0 \Rightarrow (-\infty, -1) \cup (0, \frac{r}{r})$$

$1 \cap 2 \Rightarrow (0, \frac{r}{r})$ ✓

$$\frac{x^r - 1}{x} \leq r \Rightarrow \frac{x^r - rx - 1}{x} \leq 0 \Rightarrow \frac{(x-0)(x+r)}{x} \leq 0 \quad -8$$

x	-r	0
-	+	-
-	+	+

$\Rightarrow x = (-\infty, r] \cup (0, 0]$

(3)