

$m^r - am + b$
 $\begin{cases} 1 - a + b = 0 \\ 9 - 4a + b = 0 \end{cases} \Rightarrow \begin{cases} -1 + a - b = 0 \\ 9 - 4a + b = 0 \end{cases} \Rightarrow \begin{cases} a = 1 \\ a = 3 \\ b = 3 \end{cases}$

$(a - r)m^r = 0 \Rightarrow m = -1 \Rightarrow r = -1 \Rightarrow m = \frac{-1}{r}$

$k - r = a \Rightarrow a > 0 \Rightarrow k - r < 0 \Rightarrow k < r \Rightarrow k = 1 \Rightarrow (k - r)m + m - 1 = 0$
 $\frac{m}{n} + k = -1 \Rightarrow m = -n - 1$

$-\frac{1}{r}m^r + rm + 4 > \frac{k}{r} \Rightarrow -\frac{1}{r}m^r + rm + 4 = \frac{k}{r} \Rightarrow -\frac{1}{r}m^r + rm + \frac{a}{r} = 0 \Rightarrow -m^r + km + a = 0$

$x = \frac{-k \pm \sqrt{14 - 4(-1)(a)}}{2(-1)} \Rightarrow x = \frac{-k \pm \sqrt{14 + 4a}}{-2}$
 $b = a, a = -1 \Rightarrow b - a = 4$

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

$(a - 1)m^r + (a - 1)m + 1 < 0$
 $\Delta < 0 \Rightarrow b^2 - 4ac < 0 \Rightarrow (a - 1)^2 - 4(a - 1) < 0$
 $a^2 + 1 - 2a - 4a + 4 < 0 \Rightarrow a^2 - 6a + 5 < 0$

$m \in (r, +\infty) \Rightarrow m > r \Rightarrow m - r > 0 \Rightarrow m - r$
 $\frac{m(m^r + m)}{m - r}$

$\frac{(m - r)(m + r)(m - 1)(m - 1)}{(m^r + m + 1)(r - m)^2} \leq 0$
 $m \in [-r, r) \cup [r, +\infty)$

$\frac{rm^r - rm - rm^r - 1}{m^r + r} < 0 \Rightarrow \frac{m^r - rm - 1}{m^r + r} < 0 \Rightarrow (m - r)(m + r) < 0 \Rightarrow m \in (-r, r)$

$\frac{m(m^r - r)}{m + 1} < 0 \Rightarrow m \in (0, \frac{r}{2})$

$\frac{m^r - 1}{m} \leq r \Rightarrow \frac{m^r - rm - 1}{m} \leq 0 \Rightarrow (m - 0)(m + r) \leq 0$
 $m \in [-r, 0) \cup (0, r]$