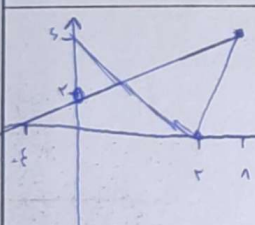


$\frac{(1-k)^r + k^r}{x^r(1-x)^r} = \frac{140}{9} \Rightarrow \frac{r k^r + r k + 1}{(k-k^r)^r} = \frac{140}{9} \Rightarrow \frac{r(k^r - k) + 1}{(k^r - k)^r} = \frac{140}{9} \xrightarrow{k^r - k = t} \frac{r+1}{t^r} = \frac{140}{9} \Rightarrow 140 t^r - (r+1)t = 0$ $\Rightarrow t \begin{cases} t = \frac{r}{14} \rightarrow \frac{r}{14} = k^r - k \rightarrow k^r - k + \frac{r}{14} \xrightarrow{\Delta > 0} \delta = 1 \\ t = \frac{r}{10} \rightarrow \frac{r}{10} = k^r - k \rightarrow k^r - k - \frac{r}{10} \xrightarrow{\Delta > 0} \delta = 1 \end{cases} \quad \left. \vphantom{\begin{matrix} t = \frac{r}{14} \\ t = \frac{r}{10} \end{matrix}} \right\} 1 + 1 = 2$	6
$-x^5 + 4x - 1 \geq 0 \rightarrow x \leq 1 \rightarrow -x^5 + \varepsilon x^5 + 4x - 1 \geq 0 \Rightarrow x^5(-x + \varepsilon) + 4x - 1 \geq 0$ $\begin{array}{c c c c} -\omega & \varepsilon & \omega & \\ + & - & + & - \end{array} \rightarrow \varepsilon \leq x \leq \omega \xrightarrow{x=6} \sqrt{\varepsilon + \sqrt{0}} + \sqrt{14 + \sqrt{0}} = \varepsilon + 7$ استقرار ↓ (k-ε)(ω-k^r) ≥ 0 ↘ k = ε	7
$\begin{aligned} \text{مثال 1} &\rightarrow x \leq -1 \rightarrow y = -x - 1 \rightarrow \frac{-x+14}{x} = -x-1 \Rightarrow -x-1 = 14-x \Rightarrow x = -1, y = 14 \rightarrow A(-1, 14) \\ \text{مثال 2} &\rightarrow -2 \leq x < 1 \rightarrow y = 3 \rightarrow \frac{14-x}{x} = 3 \Rightarrow 9 = 14-x \Rightarrow x = 5 \rightarrow \text{این بازه نیست} \\ \text{مثال 3} &\rightarrow x \geq 1 \rightarrow y = x+1 \rightarrow \frac{14-x}{x} = x+1 \Rightarrow x+3 = x+14 \Rightarrow x = 3, y = 4 \rightarrow B(3, 4) \\ AB &\rightarrow \sqrt{(\Delta x)^2 + (\Delta y)^2} \rightarrow \sqrt{\varepsilon + 34} = 2\sqrt{10} \end{aligned}$	8
 $\sqrt{x^2 - \varepsilon x + \varepsilon} = x - 2 $ $\frac{xy}{x} = y \rightarrow y_2 x = 12$	9
$\frac{1}{k} + \frac{1}{k+9} = \frac{1}{40} \Rightarrow 40(k+9) + 40k = k(k+9) = 40k + 360 + 40k = k^2 + 9k \Rightarrow k^2 - 14k - 360 = 0$ ↓ کسر ↓ ضرب $\Rightarrow (k+36)(k-10) = 0 \Rightarrow k = 10$ ↓ جواب	10