

①: $n \rightarrow f(-n) - n f(n) = 2|n| + 1$

$\left. \begin{matrix} -n \end{matrix} \right\} f(n) + n f(-n) = 2|n| + 1$

$\rightarrow x f(n) = -n f(-n) + n^2 f(n) = 2n|n| + -n$

$(1+n^2) f(n) = -2n|n| - n + 2|n| + 1$

$f(n) \begin{cases} n > 0: & \frac{-2n^2 + n + 1}{n^2 + 1} \\ n < 0: & \frac{2n^2 - n + 1}{n^2 + 1} \end{cases}$

$f(1) \rightarrow 2 f(1) = 4 \rightarrow f(1) = 2$

$f(n^2) \Rightarrow f(n^2) + 3 = n^2 - 2n^2 + 4 \rightarrow f(n^2) = n^2 - 2n^2 + 4$

$ny - y = n^2 + n + 1 \Rightarrow n^2 - ny + n + 1 + y = 0$

$n^2 + n(1-y) + 1+y = 0 \quad \Rightarrow \quad n = \frac{-(1-y) \pm \sqrt{(1-y)^2 - 4(1+y)}}{2}$

$y^2 - 2y + 1 - 1 - 4 = y^2 - 4y - 4 \geq 0$

$\frac{1}{1-1} \quad R_f = R - \{-1, 2\}$

الف	ب	ج	د
$a > 0$ $\frac{x}{y} = n_{\min}$ $y_{\min} = \frac{2x^2}{14} - \frac{2x}{7} + 1$ $\Rightarrow \frac{x}{14} - \frac{1}{14} + \frac{11}{14} = -\frac{3x}{14}$ $R_f = [-\frac{3x}{14}, +\infty)$	$n_{\max} = 3$ $y_{\max} = 2$ $R_f \in [0, 2]$	$R_f = [2, +\infty)$	$y(-\infty, +\infty)$ $y(0, \infty)$ $\Rightarrow R = R$

$$u = -\frac{-y-1}{y-3} \left\{ \sqrt{m^2+1} + \frac{1}{\sqrt{m^2+1}} \right\} \quad (2) \quad \sqrt{19-12} \quad (3) \quad u(2)$$

$$R_L = R = \left\{ \frac{3}{2} \right\} \quad \left\{ \sqrt{3} + \frac{1}{\sqrt{3}} = \frac{4\sqrt{3}}{3} \right\} \quad \left\{ \frac{3}{2}, +\infty \right\} - \left\{ \frac{3}{2} \right\}$$

$$R_R = \left\{ \frac{4\sqrt{3}}{3}, +\infty \right\} \quad \left\{ \frac{3}{2} + \frac{1}{\frac{3}{2}} - \frac{3}{2} = 0 \right\}$$

$$R_R = \left\{ \frac{1}{\frac{3}{2}}, +\infty \right\}$$

$$u = \frac{y-2}{y+1} \quad \left\{ \begin{array}{l} u \in (-\infty, +\infty) \\ +\infty \rightarrow 3 \\ 0 \rightarrow \frac{2}{3} \end{array} \right. \quad \text{نقطه انحناء (4)}$$

$$R_R = (-\infty, \frac{2}{3}] \cup [3, +\infty)$$

$$y m^2 - y = 3 m^2 + 2 \rightarrow (3-y) m^2 = (3+y) \rightarrow$$

$$3(3-y) = 0 \rightarrow y = 3$$

$$-3(3-y) [3+y] \rightarrow \frac{-2y}{3+y} +$$

$$R_R = (-\infty, -2) \cup (3, +\infty)$$

$$\sin x \rightarrow -\frac{1}{x} \quad \text{محدوده } R_R \rightarrow R_R \left[-\frac{1}{3}, -\frac{1}{x} \right] \quad (2)$$

$$\sin x \rightarrow -\frac{1}{x}$$

$$\sqrt{\frac{9(m-2)}{m(m-2)}} = \left[\frac{3}{2} \right] \quad R_R$$

$$(3) \quad R_R = R - \left\{ \frac{3}{2} \right\} \quad \left[\frac{3}{2}, +\infty \right) \quad \text{ان } (1)$$

$$\rightarrow \frac{3}{2} y$$

