

IV, 4b

$a^2 - 3 \geq 1 \cup a^2 - 3 = 0 \quad \Leftrightarrow \quad a^2 - 3 > 1$ $\downarrow \qquad \qquad \downarrow \qquad \qquad \Rightarrow a^2 > 4$ $a \in \mathbb{R} - (-2, 2) \cup a = \pm \sqrt{3}$ $\Rightarrow a \in \mathbb{R} - (-2, 2) \cup \{-\sqrt{3}, +\sqrt{3}\} \checkmark$	الف ٢ ٤
$L(n) = n^3 + an^2 + bn + c$ $L(-1) = 3n^3 + 4an + b - 3 \text{ مقلوب}$ $\Rightarrow a = 9, b = 27$ $\Rightarrow L(n) = n^3 + 9n^2 + 27n + c$ $L(-1) = -1 + 9 + 27 + c = -1 \Rightarrow c = 29$ $L(n) = n^3 + 9n^2 + 27n + 29 = (n+3)^3 - 1 \Rightarrow [-2, +\infty) \checkmark$ o.k. $K = -2$	٢ ٧
$D_L = [0, +\infty) \quad (2)$ $L_0 L(n) \leq L(\sqrt{n})$ $\Rightarrow L(n) \leq \sqrt{n}$ $\Rightarrow n + \sqrt{n} - 2 \leq \sqrt{n}$ $\Rightarrow n - 2 \leq 0 \Rightarrow n \leq 2 \quad (1)$ $f(n) \text{ مقلوب}$ $f(n) \geq 0 \rightarrow n \geq 1$	١٢٥ ٨
$t = \sqrt[3]{9\cos^2 n - 1} \quad \sqrt[3]{1 - 9\cos^2 n} = \frac{1}{t}$ $\cos^2 n = 1 : \max(t) = 2$ $\cos^2 n = 0 : \min(t) = \frac{1}{2}$ $L(n) = t - \frac{1}{t} \Rightarrow R_L = \left[\frac{1}{2} - \frac{1}{\frac{1}{2}}, 2 - \frac{1}{2} \right] = \left[-1, 2 \right]$ $\frac{1}{2} \quad \quad 2$	٢ ٩
$D_L = (-\infty, 1) \quad [-2, 1)$ $t = r^n \Rightarrow t < 1$ $g(n) = \frac{t - \frac{1}{t}}{2}$ $\Rightarrow R_{g \circ L} = \left[\frac{2 - \frac{1}{2}}{2}, \frac{1 - \frac{1}{1}}{2} \right] = \left[\frac{3}{4}, 0 \right]$ $n \in [n+2] : n - [n] - 2 \rightarrow R = [-2, 1)$ راجع اصل درس بود	١ ١٠