

حد متخرج باید $\neq$ سورد $\Rightarrow 2(2) - 5 = -1 < 0$

$\Rightarrow (x-2)^2 = x^2 + ax + b \Rightarrow a = -4, b = 4$
 $a + b = 0$

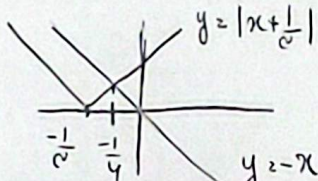
حد متخرج باید $\neq$ سورد $\Rightarrow \sqrt[3]{4} > 0$

$(x - \sqrt[3]{4})^2 = x^2 + ax + b \Rightarrow a = 2\sqrt[3]{4}, b = \sqrt[3]{14}$

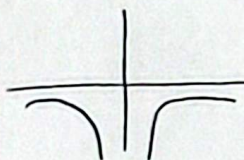
$\left[\frac{b}{a}\right], \left[\frac{\sqrt[3]{14}}{2\sqrt[3]{4}}\right], \left[\frac{\sqrt[3]{4}}{2}\right] = \left[\sqrt[3]{\frac{1}{2}}\right] = 0$

متخرج باید به ازای $x = \frac{1}{\sqrt{e}}$ صفر سورد $\Rightarrow \left|\frac{\sqrt{e}}{e} \times \frac{1}{\sqrt{e}} + a\right| + a = 0$

$\Rightarrow a = -\frac{1}{4} \Rightarrow [a] = -1$

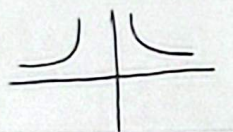


$y = -\frac{2}{x^2}$



$\lim_{x \rightarrow (-\frac{1}{2})^+} \frac{14x - [(-1)^-]}{24x + [12^+]} = \frac{14x + 9}{24x + 12} = +\infty$

$y = \frac{e}{x^2}$



$\lim_{x \rightarrow 2^+} \frac{x^2 - 4}{x^2 - [x^e]} = \frac{x^2 - 4}{x^2 - 8} = \frac{x + 2}{x^2 + 4x + 8} = \frac{4}{12} = \frac{1}{3}$

$$\lim_{x \rightarrow -1} \frac{x^2 + 10x + 14}{12 + 4\sqrt{x}} \stackrel{\text{Hop}}{=} \lim_{x \rightarrow -1} \frac{1x + 10}{4x \cdot \frac{1}{\sqrt{x}}} = -12$$

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$$1 - \cos x \sim \frac{x^2}{2} \quad \lim_{x \rightarrow 0^-} \frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{\frac{x^2}{2}}} \times \frac{\sqrt{1+\sqrt{x}}}{\sqrt{1+\sqrt{x}}} = \frac{1x}{-2x \sqrt{\frac{1}{2}} \times \sqrt{x}} = -1$$

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$$K = -1 \iff K + \cos(0) = 0 \iff \cos(0) = 0 \iff$$

$$\lim_{x \rightarrow 0} \frac{\cos(\sqrt{a}x) - 1}{-x^2} = \frac{1 - \cos(\sqrt{a}x)}{x^2} = \frac{\frac{ax^2}{2}}{x^2} = \frac{a}{2} = 1 \implies a = 4$$

$$\frac{a}{K} = \frac{4}{-1} = -4$$

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$$\lim_{x \rightarrow (\frac{1}{9})^+} \frac{1\sqrt{x-1/9}}{\sqrt{x^2-9/9}} + \lim_{x \rightarrow (\frac{1}{9})^+} \frac{1\sqrt{x-1/9}}{\sqrt{x^2-9/9}} = \lim_{x \rightarrow (\frac{1}{9})^+} \frac{1}{\sqrt{x+1/9}} + 1 \lim_{x \rightarrow (\frac{1}{9})^+} \frac{\sqrt{x-1/9}}{\sqrt{x^2-9/9}} \times \frac{\sqrt{x+1/9}}{\sqrt{x+1/9}}$$

$$\frac{1}{\sqrt{4/9}} + 1 \lim_{x \rightarrow (\frac{1}{9})^+} \frac{\sqrt{x-1/9}}{(\sqrt{x+1/9})(\sqrt{x+1/9})} = \frac{1}{\sqrt{4/9}}$$

$$\lim_{x \rightarrow -1} \frac{1 - K[x]}{x^2 - 1} \begin{cases} (-1)^+ \lim_{x \rightarrow (-1)^+} \frac{1+K}{0^-} = -\infty \Rightarrow 1+K > 0 \Rightarrow K > -1 \\ (-1)^- \lim_{x \rightarrow (-1)^-} \frac{1+K}{0^+} = -\infty \Rightarrow 1+K < 0 \Rightarrow K < -\frac{1}{2} \end{cases}$$

$$-1 < K < -\frac{1}{2} \Rightarrow -\pi < K\pi < -\frac{\pi}{2} \Rightarrow -1 < \cos K\pi < 0 \quad \text{در این صورت}$$

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