کامیار نیری — دوازدهم تجربی A

$\Delta \leq 0 \quad (m-1)^2 - 4 \times 2(m-4) \leq 0 \qquad |a^3 + a^2| = 0 \Rightarrow a^2(a+1) = 0 \quad \begin{cases} a = 0 \times \\ a = -1 \checkmark \end{cases}$

$(m-7)^2 \leq 0 \qquad m = 7$

۱) $\lim \dfrac{\sqrt{3}\,|x+1|}{|x+1| \times |x^2 - x + 1|} = \dfrac{\sqrt{3}}{3} \qquad \dfrac{2\sin b}{3} = \dfrac{\sqrt{3}}{3} \rightarrow \sin b = \dfrac{\sqrt{3}}{2} \Rightarrow b = \dfrac{\pi}{3}$

---

۲) $5x^2 - ax - b = 0 \rightarrow x = 1 \qquad \lim \dfrac{x^2 + ax + b}{x-1} \xrightarrow{\text{هوپیتال}} 2x + a$

$x^2 + ax + b = 0 \rightarrow x = 1$

$\left.\begin{array}{l} 5 - a + b = 0 \\ 1 + a + b = 0 \end{array}\right\} \Longrightarrow \begin{array}{l} 4 - 2a = 0 \\ a = 2 \\ b = -3 \end{array} \qquad \left[\dfrac{-3-4}{3}\right] = -3$

---

۳) $\dfrac{2x + 1}{-a} = 1 \Rightarrow f(5) = b(5 - [-5]) = 10b$

$10b = \dfrac{7}{3} \Rightarrow b = \dfrac{7}{30}$

$a = -3$

$\dfrac{x^2 + \cancel{ax + b}}{a(x - x)} \xrightarrow{\text{هوپیتال}} \dfrac{x^2 + x - 2}{a(1-x)} \qquad a = \left(\dfrac{-7}{10}\right)$

$\lim \dfrac{|x^2 + x - 2|}{a(1-x)} = \dfrac{28}{-4 \times -3} = \dfrac{7}{3}$

جزء صحیح $\Rightarrow a[x] + b[x] + a + b[a] + b \quad (a+b)[x] + a + b + b[a]$

۴) $a + b = 0 \Rightarrow f(x) = b[a] \qquad \dfrac{a[a]}{f(a)} = \dfrac{a[a]}{-a[a]} = -1$

---

۵) $f(x) = b[x^2 - ax] - 2a$

$\rightarrow b = 0 \qquad f(2) = -2a$

$\dfrac{a}{f(b)} = \dfrac{a}{-2a} = -\dfrac{1}{2}$

$$\text{هوپیتال} \Rightarrow \frac{٢x+m}{-١} = ٢$$

$$f(a) = f(٢a) = a = ٠$$

$٢a + m = -٢ \quad a^٢ + am + n = ٠ \quad ٤a^٢ + ٢am + n = ٠$

$a = ٢ \quad m = -٦ \quad n = ٨ \Leftarrow \begin{cases} ٣a^٢ + am = ٠ \\ a(٣a+m) = ٠ \\ n - m = ١٤ \end{cases}$

(٦

(٧

$$\lim_{x \to k^+} f(x) = (١-a)(k) + (٢a^٢-١)(-k-١)$$

باهم برابر هستند $\Rightarrow ٣a^٢ + a - ٢ = ٠$

$$\lim_{x \to k^-} f(x) = (١-a)(k-١) + (٣a^٢-١)(-k)$$

$a = \begin{cases} -١ & \text{غ ق ق} \\ \frac{٢}{٣} & \checkmark \end{cases}$ حاسبه شده

$$a = \frac{٢}{٣} \Rightarrow \lim_{x \to k^+} f(x) = -\frac{١}{٣} \qquad f(١٢) = b\sin\left(\frac{٣\pi}{٢}\right) \to -b = -\frac{١}{٣} \quad b = \frac{١}{٣}$$

$$\Rightarrow \frac{a}{b} = \left[\frac{\frac{٢}{٣}}{\frac{١}{٣}}\right] = ٢$$

(٨

$$= \frac{|x-١|\,|x+m+١|}{|x-١|\,(m(|x+١|)+١)} = \frac{|m+٢|}{٢m+١} \to \frac{m+٢}{٢m+١} = \frac{m}{m+٢} \Rightarrow m \neq ٢$$

$$|m+٢|(m+٢) = m(٢m+١) \qquad (m+٢)^٢ = m(٢m+١) \Rightarrow m = -١, ٤$$

$$\lim_{x \to \frac{١}{٤}} = \frac{٧}{٨} \qquad \lim_{x \to -١} = ١$$

(٩

$$a^٣ + (m-٢)a + a^٢ = ٠ \qquad a(a+١) = ٠ \qquad \lim \frac{\sqrt{٣}\,|-(x+١)|}{|x^٣+١|}$$

$$a(a^٢ + a + (m-٢)) = ٠ \qquad a = -١ \qquad m = ٢$$

$$= \frac{\sqrt{٣}\,|x+١|}{|x+١|\,|x^٢-x+١|} = \frac{\sqrt{٣}}{٣}$$

(١٠

$$\lim_{x \to ٠^+} \frac{x^٢+x}{x^٢+ax} = \frac{٢x+١}{٢x+a} = \frac{١}{a}$$

$$\lim_{x \to ٠^-} = \frac{x^٢+x}{x^٢-ax} = \frac{٢x-١}{٢x-a} = \frac{١}{a}$$

$$\frac{٢a-١}{٢a+٢} = \frac{١}{a} \qquad ٢a^٢ - a = ٢a + ٢ \qquad ٢a^٢ - ٣a - ٢ = ٠ \qquad a = \begin{cases} -\frac{١}{٢} & \text{غ ق ق} \\ ٢ & \checkmark \end{cases}$$

$$\lim_{x \to \frac{١}{٤}} = \frac{\frac{١}{١٦} + \frac{١}{٢}}{\frac{١}{١٦} + \frac{١}{١٦}} = \frac{٥}{١٦} \cdot \frac{٨}{١} = \frac{٥}{٢}$$