

$$g'(x) = (r \tan x \times (1 + \tan^2 x) - \sqrt{r} \sin x) \times f'(\tan x + \sqrt{r} \cos x) \quad \text{آزمین نوری}$$

$$g'(x) = (r \times r - 1) \times f'(r) = \sqrt{r} \rightarrow r f'(r) = \sqrt{r} \quad f'(r) = \frac{\sqrt{r}}{r} \quad (1)$$

$$f(x) - r g(x) = \frac{(r + \cos x)(r + \cos^2 x - r \cos x)}{(r - \cos x)(r + \cos x)} - \frac{r}{r - \cos x} = \frac{\cos^2 x - r \cos x}{r - \cos x} \quad (2)$$

$$\frac{-\cos x(r - \cos x)}{r - \cos x} = -\cos x \quad f'(\frac{r}{x}) - r g'(x) = \sin x \quad \sin(\sqrt{\frac{r}{x}}) = -\frac{1}{r}$$

$$f(x^+) = (rx - r) \sqrt{\frac{r}{x} a} \quad f'_+(x) = r \sqrt{\frac{r}{x} a} + 0 = r \sqrt{ra} \quad (3)$$

$$f(x^-) = (r - rx) \sqrt{\frac{r}{x} a} \quad f'_-(x) = -r \sqrt{\frac{r}{x} a} + 0 = -r \sqrt{ra}$$

$$r \sqrt{ra} = r \sqrt{r} \quad r \sqrt{ra} = \sqrt{r} \rightarrow \sqrt{ra} = \sqrt{r} \quad a = \frac{1}{r}$$

$$\left. \begin{array}{l} y = -ax + r \rightarrow f(x) = -ra + r \\ f'(x) = -a \rightarrow f'(x) = -a \end{array} \right\} \rightarrow f(x) + f'(x) = -ra + r = -1 \rightarrow a = \frac{r}{8} \quad (4)$$

$\downarrow$
 $-\frac{r}{8}$

$$\frac{y}{x} = \frac{x+\delta}{v} \rightarrow y = \frac{1}{v}x + \frac{\delta}{v} \rightarrow y' = \frac{1}{v}$$

$$y = \frac{ax-1}{rx+1} \rightarrow y' = \frac{a(rx+1) - r(ax-1)}{(rx+1)^2} = \frac{var + a - var + r}{(rx+1)^2} = \frac{a+r}{(rx+1)^2}$$

$$va + r = 9x^2 + 1 + 9x \rightarrow 9x^2 + 9x - 2 - va = 0$$

$$\left. \begin{array}{l} y = \frac{x+\delta}{v} \\ y = \frac{ax-1}{rx+1} \end{array} \right\} \rightarrow \frac{x+\delta}{v} = \frac{ax-1}{rx+1} \rightarrow rx^2 + 14x + \delta = vax - v$$

$$rx^2 + (14 - va)x + 14 = 0$$

$$\Delta = 0 \rightarrow (14 - va)^2 - 4 \times 14 = 0 \rightarrow (14 - va)^2 = 14 \rightarrow a = \frac{14}{v} \quad \text{و } a = \frac{14}{v}$$

$$f'(x) = 3x^2 + a \Rightarrow f'(1) = 12 + a = 0 \rightarrow a = -12 \quad (6)$$

$$f(x) = x^3 - 12x - b \Rightarrow f(1) = 1 - 12 - b = 0 \quad b = -11$$

$$b - a = -11 + 12 = 1$$

(7)

$$y = \frac{\sqrt{x} + 1}{\sqrt{x} - 1} \quad \sqrt{x}y - y = \sqrt{x} + 1 \quad \sqrt{x}y - \sqrt{x} = y + 1 \quad \sqrt{x} = \frac{y+1}{y-1} \quad (1)$$

$$f^{-1}(x) = \left(\frac{x+1}{x-1}\right)^2 \quad f^{-1}(x) = 2\left(\frac{x+1}{x-1}\right) \left(\frac{(x-1) - (x+1)}{(x-1)^2}\right)$$

$$f^{-1}(x) = 2x^2 - 2 = -12$$

(9)

$$\frac{f(1) - f(-1)}{1 - (-1)} = 1a - 1 = 1 \rightarrow a = 1$$

$$f(x) = (x^2 + 1)^2 (-x + 1)$$

$$f'(x) = 2(x^2 + 1)(2x)(-x + 1) + (-1)(x^2 + 1)^2$$

$$f'(x) \Rightarrow f'(1) = 2 \times 1 \times 1 - 1 = 1$$

$$y = \sin x \cos x \rightarrow \frac{f(\pi/4) - f(\pi/6)}{\pi/4 - \pi/6} = \frac{1/2 - 1/4}{\pi/12} = \frac{1/4}{\pi/12} = \frac{3}{\pi}$$

$$y = \sin^2 x - \cos^2 x \rightarrow \frac{f(\pi/4) - f(\pi/6)}{\pi/4 - \pi/6} = \frac{1/2 - 1/4}{\pi/12} = \frac{1/4}{\pi/12} = \frac{3}{\pi}$$

$$\frac{-\frac{3}{\pi}}{\frac{3}{\pi}} = -1$$