

$$f(x) = -3a - a \quad f'(x) = -a$$

$$f'(x) = f(x) + 2 \quad \cdot \quad - (f(x) + 2 = -a)$$

$$f(x) + a = -3a$$

$$\frac{f(x)}{f'(x)} = \frac{-\frac{1}{x}}{\frac{x}{x}} = -\frac{1}{x} \quad \checkmark$$

$$x = -3a \Rightarrow a = -\frac{x}{3}$$

$$f(x) = x \left[x^2 + \frac{1}{x} \right]^*$$

$$f'(x) = 4x$$

$\hookrightarrow x \times x \times x$

$$g(x) = \frac{x^2}{x^2 \sqrt{x^2 - 1}} = \sqrt{x}$$

$$(f \circ g)'(x) = g'(x) \cdot f'(g(x)) = 4x \sqrt{x}$$

$$g\left(\frac{x}{\sqrt{x}}\right) = \frac{1}{\frac{1}{x}} = x$$

$$\frac{4x \sqrt{x}}{-12x \sqrt{x}} = \left[-\frac{1}{3} \right]$$

$$(1, 8)$$

$$g'(-2) = f'(-1) = 3 f'(x)$$

$$f'(x) = f'(-1) \text{ در نقطه } x = -1$$

$$g'(-2) = 6 \quad \checkmark$$

$$(2)$$

$$\text{Hop: } \frac{-2 f'(a-h) f(a-h) + 3 f'(a-h)}{-2h + a} = \frac{-2 f'(a) f(a) + 3 f'(a)}{a}$$

$$\Rightarrow \frac{-2 \left(2 + \frac{1}{12} \right) + 3 \left(\frac{2a}{12} \right)}{a} = \frac{-a}{12}$$

$$(2)$$

$$y = \frac{x^{m+1}}{x} \quad m = \frac{1}{x}$$

$$\text{مس: } m' = -2 \Rightarrow y' = x^m - 2 = -2 \Rightarrow m = 1 \quad y = x$$

$$(1, 4)$$

$$(2)$$

$$\text{نقطهٔ دُری} \rightarrow \phi_{+}(a) = \phi_{-}(a)$$

$$n=0 \rightarrow \text{مشتق هر ضربه است} \quad \times$$

$$n=1 \rightarrow \phi'_{-}(a) = 0, \quad \phi'_{+}(a) = 1 \quad \checkmark$$

$$\rightarrow \boxed{n=1}$$

$$> 1 \rightarrow \phi'_{-}(a) = 0, \quad \phi'_{+}(a) = n(\underbrace{x-a}_{a-a=0})^{n-1} \quad \times$$

$$(\phi \circ g)' = g'(\frac{r}{\sqrt{\lambda}}) \times \phi'(g(\frac{r}{\sqrt{\lambda}}))$$

$$g(\frac{r}{\sqrt{\lambda}}) = \frac{1}{\sqrt{\frac{9}{\lambda} - 1}} = r \rightarrow g'(\frac{r}{\sqrt{\lambda}}) \times \phi'(r)$$

$$g'(\frac{r}{\sqrt{\lambda}}) = -\frac{1}{\frac{9}{\lambda}} (x^2 - 1)^{-\frac{1}{2}} \times r = \frac{4}{\sqrt{\lambda}} \times -\frac{1}{\frac{9}{\lambda}} \times (\frac{9}{\lambda} - 1)^{-\frac{1}{2}} = -\frac{4}{\sqrt{\lambda}} \times (r^2)^{-\frac{1}{2}}$$

$$= -\frac{4r^2 \times \sqrt{r}}{r} = -4\sqrt{r}$$

$$\phi(n), n=2 \rightarrow \phi(n) = n[\varepsilon]_{+1}^2 = 4n^2_{+1} \rightarrow \phi'(r) = 8r(r) = 4r$$

$$\frac{-4\sqrt{r} \times 4r}{-4\sqrt{r}} = \boxed{4r}$$