

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

$$f(x) = \frac{1}{\sqrt{x}}$$

$$\Rightarrow (f \circ g)'(\sqrt{x}) = 1$$

$$f(x) = -2x - 8$$

$$f'(x) = -2$$

$$-2 - (-2x - 8) = 2 \Rightarrow x = -\frac{2}{2}$$

$$\frac{f(x)}{f'(x)} = \frac{\frac{1}{x} - 2}{-\frac{2}{x}} = -\frac{1}{2}$$

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

$$g(\frac{x}{g}) = x$$

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

$$\frac{\frac{x}{x}}{-1 \times \sqrt{1}} = -1$$

$$g'(-1) = f'(-1) + x f'(x)$$

$$= 4$$

$$\lim_{x \rightarrow 0} \frac{-x f'(x) + x f'(x)}{x} = \frac{x}{x} \Rightarrow f'(x) = 2$$

$$m = \frac{1}{x} \quad m' = -\frac{1}{x^2}$$

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

برای حل این سوال

$$f(1) = a + 1 = b$$

$$y = a + \sqrt{x} = a + 1$$

$$x = 0 \Rightarrow y = a + 1$$

$$y = b + \sqrt{x}$$

$$\lim_{x \rightarrow 0} \frac{b + \sqrt{x}}{x} = \lim_{x \rightarrow 0} \frac{b}{x}$$

$$\Rightarrow b = 0$$

$$\Rightarrow a = -1 \quad a + b = 1$$

$$(f \circ g)'(x) =$$

$$\left(\frac{x \sqrt{x} - x \sqrt{x} - \sqrt{x}}{\sqrt{x}} \right)' = \left(-\sqrt{x} \right)' = \frac{1}{2} x^{-\frac{1}{2}}$$

$$\Rightarrow (f \circ g)'(1) = \frac{1}{2}$$

$$ab + c = \frac{1}{a}$$

$$f'(x) = b$$

$$f'(a) = -\frac{1}{a^2}$$

$$\Rightarrow b = -\frac{1}{a^2}$$

$$\Rightarrow ab = -\frac{1}{a}$$

$$-\frac{1}{a} + c = \frac{1}{a} \Rightarrow ac = 2$$

$$f'(x) = 0$$

$$f'(x) = \lim_{x \rightarrow a} \frac{b + (x-a)^m - b}{x-a} =$$

$$\lim_{x \rightarrow a} (x-a)^{m-1} \Rightarrow m-1 < 0$$

$$\Rightarrow m < 1 \Rightarrow m = 0$$