گزینه ۵

$$f'_+(1) = \lim_{x\to 1^+} \frac{b\sqrt[3]{x^2} - b}{x-1} = \frac{b}{2}$$

$$\frac{b(\sqrt[3]{x}-1)(\sqrt[3]{x}+1)}{(\sqrt[3]{x}-1)(\sqrt[3]{x^2}+1+\sqrt[3]{x})}$$

$$f'_-(1) = \lim_{x\to 1^-} \frac{x^{\frac{1}{3}}+\sqrt{x^2}-b}{x-1} = \frac{\sqrt[3]{x^2}-1}{x-1} = 1$$

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

$$\frac{b}{2} = 1 \Rightarrow b = 2 \quad a = 1 \quad a+b = 3$$

② $(f(1)-g(1))' = \frac{2x-4-2x+4\cdot\frac{1}{2}\sqrt{2x}}{\sqrt[3]{x^2}} = \frac{-2+\sqrt{2x}}{\sqrt[3]{x^2}}$

حد $\frac{\sqrt{2}}{2}$

③ چون: $ab+c=\frac{1}{a}$

$f'_-(a) = \lim_{x\to a^-} \frac{bx+c-\frac{1}{a}}{x-a} = \frac{b(x-a)}{x-a} = b$ ($c=-ab$)

$f'_+(a) = \lim_{x\to a^+} \frac{\frac{1}{x}-\frac{1}{a}}{x-a} = \frac{\frac{a-x}{ax}}{x-a}, \frac{-1}{ax} = \frac{-1}{a^2}$

$ba^2=-1$

$\underbrace{a^2b}_{-1}+ca=1 \Rightarrow ac=2$

④ $f'_+(a) = \lim_{x\to a^+} \frac{b+(x-a)^m-b}{x-a} \Rightarrow (x-a)^{m-1} = (0)^{m-1}$

$f'_-(a) = \lim_{x\to a^-} \frac{b-b}{x-a} = 0$

$\Downarrow$

$m-1=0 \Rightarrow m=1$

⑤ $g(x)=\frac{1}{2x^2} \Rightarrow g'(x)=\frac{-4x}{4x^4} \Rightarrow g'(\sqrt[3]{2}) = \frac{-3\sqrt{4}}{8}$

$\Rightarrow g(\sqrt[3]{2}) = \frac{-1}{4}$

$f(x) = \frac{1}{\sqrt[3]{2x}} \Rightarrow f'(x) = \frac{-2}{3\sqrt[3]{4x^2}}$

$\frac{-3\sqrt{4}}{8} \times \frac{-2}{3} = \frac{\sqrt{4}}{4}$

$\frac{\frac{-2}{3\sqrt[3]{4x^2}}}{\frac{-1}{4}} = \frac{2}{3}$

⑥ $f(x) = -x^2 - 5 \Rightarrow$ نقطة $-a + x^2 + 5 = x$

$f'(x) = -a \Rightarrow f'(x) = -a \Rightarrow x^2 = -x \Rightarrow a, -1, 5$

$\Downarrow$

$1, 5 \Rightarrow \frac{f(x)}{f'(x)}, \boxed{-\frac{1}{x}}$

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⑦ $(fog)' = f'(g(x)) \times g'(x) = \frac{-x}{\sqrt{x}} \times x \Rightarrow \boxed{-\sqrt{x}}$

$f(x) = x^2 + 1 \Rightarrow f'(x) = 2x \Rightarrow f'(1) = 4$

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

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

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⑧ $g'(x) = f'(x+1) + x^2 f'(2x+0.)$

$\Rightarrow g'(-2) = f'(-1) + 4f'(4) = 4f'(-1) = \boxed{9}$

$f'(-1) > f'(4)$

⑨ $\underline{\text{hop}}$ $\lim_{h \to 0} \dfrac{\overbrace{-2f(a-h)}^{-4} + \overbrace{3f(a-h)}^{6}}{-1} = \boxed{-2}$

$f(a) = 2$

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⑩ $y = \frac{1}{2}x + \frac{1}{4} \longrightarrow$ ميل المماس $= -2$

$y' = 2x - 4 = -2 \Rightarrow \boxed{x = 1} \quad (1, 2)$