۲۵ B گزینه ① ابتدا عبارت مزدوج

$$\lim_{x\to 1} \frac{(x-\frac{3}{5})(x-1)\times 5}{(x-\frac{3}{5})(x+1)\times 5} = \frac{1}{2}$$

②

$$\lim_{x\to 0} \frac{|2x-1|-|3x+1|}{x}$$

-1 | -4 | 0 | -4 | 1 | $\frac{-2}{x}$

$$\Rightarrow \lim_{x\to 0} f(x) = -4$$

③

$$\lim_{x\to 4} \frac{(\sqrt{x}-2)(\sqrt{x}+2)}{\sqrt{x}-2} = 4$$

④

$$\lim_{x\to 2} \frac{\sqrt{x}(\sqrt{x}-\sqrt{2})}{2(x-2)(x+2)} = \frac{1}{2}$$

⑤

$$\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} \times \frac{2+\sqrt{5-x}}{2+\sqrt{5-x}} = \frac{(1-\sqrt{x})(2+\sqrt{5-x})}{x-1} = \frac{(1-\sqrt{x})(2+\sqrt{5-x})}{-1-\sqrt{x}} = -4$$

⑥

$$\lim_{x\to 3} \frac{\sqrt{4x+4}-4}{\sqrt[3]{5x+1}-2} \times \frac{\sqrt{4x+4}+4}{\sqrt{4x+4}+4} \times \frac{\sqrt[3]{(5x+1)^2}+2\sqrt[3]{5x+1}+4}{\sqrt[3]{(5x+1)^2}+2\sqrt[3]{5x+1}+4}$$

$$= \frac{4x-12}{5x-20} \times \frac{12}{8} = \frac{3}{5} \times \frac{3}{2} = \frac{9}{10}$$

(٧)

$$\frac{\sqrt{x^3+\sqrt{x}}-2}{\sqrt[3]{x}-1} \times \frac{\sqrt{x^3+\sqrt{x}}+2}{\sqrt{x^3+\sqrt{x}}+2} \times \frac{\sqrt[3]{x^2}+\sqrt[3]{x}+1}{\sqrt[3]{x^2}+\sqrt[3]{x}+1}$$

$$\lim_{x\to 1} = \frac{3x^2+\frac{1}{2\sqrt{x}}}{1} = \frac{x^3+\sqrt{x}-2}{x-1} \times \frac{3}{4} = \frac{21}{8}$$

(٨)

$$\lim_{x\to 0} \frac{1+\cos^2 x}{\sin^2 x} \Rightarrow \frac{(\cos x+1)(\cos^2 x-\cos x+1)}{\sin^2 x \cdot (1-\cos^2 x)}$$

$$= \frac{\cos^2 x-\cos x+1}{1-\cos x} = \frac{3}{2}$$

(٩)

$$\lim_{x\to \frac{\pi}{4}} \frac{1-\tan x}{\sin x-\cos x} = \frac{\frac{\cos x-\sin x}{\cos x}}{\sin x-\cos x} = \frac{1}{\cos x} \Rightarrow \sqrt{2}$$

(١٠)

$$\cos 2\alpha = \cos^2\alpha - \sin^2\alpha$$

$$\Rightarrow \tan^2\alpha - 1 = \frac{\sin^2\alpha - \cos^2\alpha}{\cos^2\alpha} \Rightarrow \frac{\tan^2\alpha - 1}{\cos 2\alpha} = -\frac{1}{\cos^2\alpha}$$

$$\lim_{\alpha\to \frac{\pi}{4}} = -2$$