① $\lim_{x\to 1} \frac{4x^2-2x+3}{9x^2-4x+3} = \frac{(2x-1)(4x-3)}{(x-1)(9x-3)} = \frac{4-3}{9-3} = \frac{1}{2}$

② $\lim_{x\to 0} \frac{|2x-1|-|3x+1|}{x} = \frac{1-2x-3x-1}{x} = \frac{-5x}{x} = -5$

③ $\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2} \overset{\times 2}{\underset{\times 2}{}} \frac{x-4}{x-4} \times \frac{\sqrt{x}+2}{1} = 1\times 4 = 4$

④ $\lim_{x\to 2} \frac{x-\sqrt{2x}}{2x^2-x-6} \overset{\times 2}{\underset{\times 2}{}} \frac{x^2-2x}{(x-2)(2x+3)} \times \frac{1}{x+\sqrt{2x}} = \frac{x(x-2)}{(2x+3)(x+\sqrt{2x})} = \frac{2}{7\times 4} = \frac{1}{14}$

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

⑥ $\lim_{x\to 1} \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} \overset{\times 2}{\underset{\times 2}{}} \frac{3}{1} \times \frac{2}{2} = \frac{3x+4-16}{5x+7-27} \times \frac{\sqrt[3]{(5x+7)^2}+9+3\sqrt[3]{5x+7}}{\sqrt{3x+4}+4}$

$= \frac{3(x-4)}{5(x-4)} \times \frac{9+9+9}{4+4} = \frac{3\times 27}{40} = \frac{81}{40}$

⑦ $\lim_{x\to 1} \frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} = \frac{(3x+\sqrt{x}-4)(\sqrt[3]{x^2}+\sqrt[3]{x}+1)}{(x-1)(\sqrt{3x+\sqrt{x}}+2)} = \frac{(\sqrt{x}-1)(3\sqrt{x}+4)(\sqrt[3]{x^2}+\sqrt[3]{x}+1)}{(x-1)(\sqrt{3x+\sqrt{x}}+2)}$

$= \frac{7}{4}\times\frac{3}{2} = \frac{21}{8}$

⑧ $\lim_{x\to \pi} \frac{1+\cos^3 x}{\sin^2 x} = \frac{(1+\cos x)(1+\cos^2 x-\cos x)}{(1+\cos x)(1-\cos x)} = \frac{1+1+1}{1+1} = \frac{3}{2}$

(9)

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

(10)

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