

$$\lim_{x \rightarrow 1} \frac{4x^2 - 7x + 3}{5x^2 - 8x + 3} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{(x-1)(4x-3)}{(x-1)(5x-3)} = \boxed{\frac{1}{2}} \quad (2) \text{ 1}$$

$$\lim_{x \rightarrow 0} \frac{|3x-1| - |3x+1|}{x} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{-3x-1 - 3x-1}{x} = \frac{-6x-2}{x} = \frac{-6}{1} = \boxed{-6} \quad (2) \text{ 2}$$

$3x-1 < -1 \rightarrow$ منفی
 $3x+1 > 1 \rightarrow$ مثبت

$$\lim_{x \rightarrow 4} \frac{x-4}{\sqrt{x}-2} = \frac{0}{0} = \frac{(\sqrt{x}-2)(\sqrt{x}+2)}{\sqrt{x}-2} = \boxed{4} \quad (2) \text{ 3}$$

$$\lim_{x \rightarrow 2} \frac{x-\sqrt{2x}}{2x^2-x-4} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{x(x-\sqrt{2x})}{(x-2)(2x+4)} \times \frac{1}{\sqrt{2x}} = \frac{2}{1 \times 4} = \boxed{\frac{1}{2}}$$

$\lim_{x \rightarrow 2} \frac{1}{\sqrt{2x}} = \frac{1}{\sqrt{4}} = \frac{1}{2}$

$$\lim_{x \rightarrow 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{1-x}{x-1} \times \frac{\sqrt{5-x}}{2\sqrt{x}} = \frac{-1 \times 2}{2} = \boxed{-1} \quad (2) \text{ 4}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{3x+4} - 4}{\sqrt{5x+7} - 3} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{\sqrt{3x+4}-4}{\sqrt{5x+7}-3} \times \frac{\sqrt{3x+4}+4}{\sqrt{3x+4}+4} = \frac{3x+4-16}{5x+7-9} \times \frac{\sqrt{3x+4}+4}{2} = \frac{3}{2} \times \frac{2\sqrt{17}}{2} = \boxed{\frac{3\sqrt{17}}{2}}$$

$$\lim_{x \rightarrow 1} \frac{\sqrt{3x+\sqrt{x}} - 2}{\sqrt{x}-1} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{\sqrt{3x+\sqrt{x}} - 2}{x-1} \times \frac{2}{2} \xrightarrow{\text{hop}} \frac{2}{1} \times \frac{1}{2} = \boxed{\frac{1}{1}} \quad (2) \text{ 5}$$

$$\lim_{x \rightarrow \pi} \frac{1 + \cos^2 x}{\sin^2 x} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{(1+\cos)(1+\cos^2 - \cos x)}{(1-\cos)(1+\cos)} = \frac{1+1+1}{2} = \boxed{\frac{3}{2}} \quad (2) \text{ 6}$$

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \tan x}{\sin - \cos} = \frac{1 - \frac{\sin}{\cos}}{\sin - \cos} = \frac{\frac{\cos - \sin}{\cos}}{\frac{\sin - \cos}{\cos}} = \frac{-1}{\cos x} = \frac{-1}{\frac{1}{\sqrt{2}}} = \boxed{-\sqrt{2}} \quad (2) \text{ 7}$$

$$\lim_{x \rightarrow \frac{\pi}{4}} \frac{\tan x - 1}{\cos x} = \frac{0}{0} \xrightarrow{\text{تجزیه اعداد}} \frac{(1 + \tan^2 x)^{\frac{1}{2}}}{-2 \sin x} = \frac{2^{\frac{1}{2}}}{-2} = \boxed{-\frac{1}{\sqrt{2}}} \quad (2) \text{ 8}$$

$\tan \frac{\pi}{4} = 1$
 $\cos \frac{\pi}{4} = \frac{1}{\sqrt{2}}$