(1)

$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3} \Rightarrow \frac{0}{0}^{\sim} \longrightarrow \frac{4\left(x-\frac{3}{4}\right)\cancel{(x-1)}}{5\left(x-\frac{3}{5}\right)\cancel{(x-1)}} \Rightarrow \frac{4\times\frac{1}{4}}{5\times\frac{2}{5}}=\boxed{\frac{1}{2}}$$

(2)

$$\lim \frac{|3x-1|-|3x+1|}{x} \Rightarrow \frac{0}{0}^{\sim} \longrightarrow \frac{-(3x-1)-(3x+1)}{x}=\frac{-6x}{x}=\boxed{-6}$$

$$x\to 0 \Rightarrow 3x-1<0 \Rightarrow |3x-1| \to -3x+1$$

(3)

$$\lim \frac{x-4}{\sqrt{x}-2} \Rightarrow \frac{0}{0}^{\sim} \longrightarrow \frac{\cancel{(\sqrt{x}-2)}(\sqrt{x}+2)}{\cancel{(\sqrt{x}-2)}}=\sqrt{x}+2 \Rightarrow 2+2=4$$

(4)

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6} \Rightarrow \frac{0}{0}^{\sim} \longrightarrow \frac{\sqrt{x}(\sqrt{x}-\sqrt{2})}{2\left(x+\frac{3}{2}\right)(x-2)}=\frac{\sqrt{x}\cancel{(\sqrt{x}-\sqrt{2})}}{2\left(x+\frac{3}{2}\right)\cancel{(\sqrt{x}-\sqrt{2})}(\sqrt{x}+\sqrt{2})}$$

$$\frac{\sqrt{x}}{2\left(x+\frac{3}{2}\right)(\sqrt{x}+\sqrt{2})}=\frac{\sqrt{2}}{2\left(\frac{7}{2}\right)(2\sqrt{2})}=\boxed{\frac{1}{14}}$$

(5)

$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}} \Rightarrow \frac{0}{0}^{\sim} \longrightarrow \frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{\overset{4}{\cancel{2+\sqrt{5-x}}}}{2+\sqrt{5-x}}\times\frac{1+\sqrt{x}}{\underset{2}{\cancel{1+\sqrt{x}}}}$$

$$\frac{1-x}{\underbrace{4-5+x}_{-1+x}}\times 2=\frac{2(\overset{-1}{\cancel{1-x}})}{\underset{1}{\cancel{(x-1)}}}=\boxed{-2}$$

Subject : ____________ Date: ____________

(6)

$$\lim \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} \to \frac{0}{0} \to \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} \times \frac{\sqrt[3]{(5x+7)^2}+9-3\sqrt[3]{5x+7}}{\sqrt[3]{(5x+7)^2}+9-3\sqrt[3]{5x+7}} \times \frac{\sqrt{3x-4}+4}{\sqrt{3x-4}+4}$$

$$\frac{3x+4-16}{5x+7-27} \times \frac{27}{8} \Rightarrow \frac{3x-12}{5x-20} \times \frac{27}{8} = \frac{3(x-4)}{5(x-4)} \times \frac{27}{8} = \boxed{\frac{81}{40}}$$

(7)

$$\lim_{x \to 1} \frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} \Rightarrow \frac{0}{0} \to \frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} \times \frac{\sqrt[3]{x^2}+1+\sqrt[3]{x}}{\sqrt[3]{x^2}+1+\sqrt[3]{x}} \times \frac{\sqrt{3x+\sqrt{x}}+2}{\sqrt{3x+\sqrt{x}}+2}$$

$$\frac{3x+\sqrt{x}-4}{x-1} \times \frac{3}{4} = \frac{3(\sqrt{x}+\frac{4}{3})(\sqrt{x}-1)}{4(\sqrt{x}-1)(\sqrt{x}+1)} = \frac{3(\frac{7}{3}) \times 3}{2 \times 4} \Rightarrow \boxed{\frac{21}{8}}$$

(8)

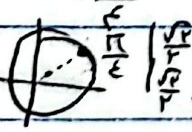
$$\lim_{x \to \pi} \frac{1+\cos^3 x}{\sin^2 x} \Rightarrow \frac{0}{0} \to \frac{\cancel{(1+\cos x)}(1+\cos^2 x-\cos x)}{\cancel{(1+\cos x)}(1-\cos x)}$$

$$1-\cos^2 x \to (1+\cos x)(1-\cos x)$$

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

(9)

$$\lim_{x \to \frac{\pi}{4}} \frac{1-\tan x}{\sin x-\cos x} \Rightarrow \frac{0}{0} \to \frac{1-\frac{\sin x}{\cos x}}{\sin x-\cos x} = \frac{\frac{\overset{-1}{\cancel{\cos x-\sin x}}}{\cos x}}{\cancel{\sin x-\cos x}} = \frac{-1}{\cos x}$$

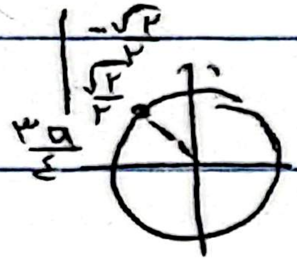


$$\frac{-1}{\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\frac{2\sqrt{2}}{2} = \boxed{-\sqrt{2}}$$

Subject : ____________ فاطمه بختیاری Date: ____________

۱۵

$$\lim \frac{\tan^۲x - 1}{\cos^۲x} \Rightarrow \frac{0}{0} \rightarrow \frac{\dfrac{\sin^۲x}{\cos^۲x} - 1}{\cos^۲x - \sin^۲x} = \frac{\dfrac{\sin^۲x - \cos^۲x}{\cos^۲x}}{\cos^۲x - \sin^۲x} = \frac{1}{\cos^۲x}$$



$$\frac{-1}{\frac{\sqrt{۲}}{۲} \times \frac{\sqrt{۲}}{۲}} \Rightarrow \boxed{-۲}$$