۱۱ دفتر B ۳۰ فاطمه فردوسی

Subject : Date:

۱)

$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3}=\frac{\cancel{(x-1)}(4x-3)}{\cancel{(x-1)}(5x-3)}$$

$$=\frac{1}{2}$$

۲)

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

$$=\frac{-6\cancel{x}}{\cancel{x}}=-6$$

۳)

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

٤)

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}\times\frac{x+\sqrt{2x}}{x+\sqrt{2x}}=\frac{x^2-2x}{(2x^2-x-6)\,4}$$

$$=\frac{x\cancel{(x-2)}}{\cancel{(x-2)}(2x+3)\,4}=\frac{2}{28}$$

۵)

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

$$=\frac{(1-x)\;4}{(x-1)\;2}=-2$$

Subject : ________________ Date: ________

$$\lim_{x\to ۴} \frac{\sqrt{۳x+۴}-۴}{\sqrt[۳]{۵x+۷}-۳} \times \frac{\text{ضم}}{\text{ضم}} \times \frac{\text{فم}}{\text{فم}} \qquad ۶$$

$$= \frac{۳x+۴-۱۶}{۵x+۷-} \times \frac{۲۷}{۸} = \frac{۳x-۱۲}{۵x-۳۰} = \frac{۳(x-۴)}{۵(x-۴)}$$

$$= \frac{۳}{۵} \times \frac{۲۷}{۸} = \frac{۸۱}{۴۰}$$

---

$$\lim_{x\to ۱} \frac{\sqrt{۳x+\sqrt{x}}-۲}{\sqrt[۳]{x}-۱} \times \frac{\text{ضم}}{\text{ضم}} \times \frac{\text{فم}}{\text{فم}} \qquad ۷$$

$$\frac{۳x+\sqrt{x}-۴}{x-۱} \times \frac{۳}{۴} \xrightarrow{hop} \frac{۳+\frac{۱}{۲\sqrt{x}}}{۱} = \frac{۷}{۲} \times \frac{۳}{۴}$$

$$= \frac{۲۱}{۸}$$

---

$$\lim_{x\to \pi} \frac{۱+\cos^۳ x}{\underbrace{\sin^۲ x}_{۱-\cos^۲}} = \frac{\cancel{(۱+\cos)}(\cos^۲+۱-\cos)}{(۱-\cos)\cancel{(۱+\cos)}} \qquad ۸$$

$$= \frac{۱+۱+۱}{۱+۱} = \frac{۳}{۲}$$

---

$$\lim_{x\to \frac{\pi}{۴}} \frac{۱-\tan x}{\sin x-\cos x} = \frac{۱-\frac{\sin}{\cos}}{\sin-\cos} = \frac{\frac{\cos-\sin}{\cos}}{\sin-\cos} \qquad ۹$$

$$= -\frac{۱}{\cos\frac{\pi}{۴}} = -\frac{۱}{\frac{\sqrt{۲}}{۲}} = -\frac{۲}{\sqrt{۲}} = -\sqrt{۲}$$

$$\lim \frac{\tan^۲ - 1}{\cos ۲x} = \frac{\frac{\sin^۲}{\cos^۲} - 1}{\cos^۲ - \sin^۲} = \frac{\frac{\sin^۲ - \cos^۲}{\cos^۲}}{\frac{\cos^۲ - \sin^۲}{1}}$$

۱۰

$$= -\frac{1}{\cos^۲} = -\frac{1}{\left(\frac{\sqrt{۲}}{۲}\right)^۲} = -\frac{1}{\frac{۲}{۴}} = -۲$$