نام و نام خانوادگی ..... کیمیا عباسی ..... پاسخنامه تشریحی تکلیف شماره ..... ۳۵ ..... کلاس ..... 11 A .....

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

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

$x\to 0^+$: $\frac{1-3^x-3^{2x}-1}{x}=\frac{-3x}{x}=-3$

$x\to 0^-$: $\frac{1-3^x-3^{2x}-1}{x}=-3$

۳

$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}\overset{\frac{0}{0}}{=}\text{ رفع ابهام }\xrightarrow{}\frac{x-4}{\sqrt{x}-2}\times\frac{\sqrt{x}+2}{\sqrt{x}+2}=\frac{x-4}{x-4}\times 4=4$$

۴

$$\frac{x-\sqrt{2x}}{2x^2-x-6}\times\frac{x+\sqrt{2x}}{x+\sqrt{2x}}=\frac{1}{2}\times\frac{(x^2-2x)}{(x-2)(2x+3)}=\frac{1}{2}\frac{x(x-2)}{(2x+3)(x-2)}=\frac{1}{2}\frac{x}{2x+3}\xrightarrow{x=2}\frac{1}{2}\times\frac{2}{7}=\frac{1}{14}$$

۵

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

٦

$$\frac{\sqrt{3x+4}-4}{\sqrt[3]{2x+7}-3}\times\frac{\sqrt{3x+4}+4}{\sqrt{3x+4}+4}\times\frac{\sqrt[3]{(2x+7)^2}+9+3\sqrt[3]{2x+7}}{\sqrt[3]{(2x+7)^2}+9+3\sqrt[3]{2x+7}}=\frac{27}{8}\times\frac{3x+4-16}{2x+7-27}=\frac{27}{8}\times\frac{3x-12}{2x-20}$$

$$=\frac{27}{8}\times\frac{3(x-4)}{2(x-4)}=\frac{81}{16}$$

٧

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

$$=\frac{21}{8}$$

٨

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

$1-\cos^2 x=\sin^2 x$

٩

$$\frac{1-\frac{\sin x}{\cos x}}{\sin x-\cos x}=\frac{\frac{\cos x-\sin x}{\cos x}}{\sin x-\cos x}=\frac{-1}{\cos x}=\frac{-1}{\frac{\sqrt{2}}{2}}=\frac{-2}{\sqrt{2}}=\frac{-2\sqrt{2}}{2}=-\sqrt{2}$$

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$$\frac{(\tan x+1)(\tan x-1)}{\cos^2 x-\sin^2 x}=\frac{\left(\frac{\sin x+\cos x}{\cos x}\right)\left(\frac{\sin x-\cos x}{\cos x}\right)}{(\cos x+\sin x)(\cos x-\sin x)}=\frac{-1}{\cos^2 x}=\frac{-1}{\left(\frac{\sqrt{2}}{2}\right)^2}=-2$$