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نام و نام خانوادگی ...الینا علی‌نجاری... پاسخنامه تشریحی تکلیف شماره ۲۰ کلاس ...یازدهم تجربی B...

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$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3}=\frac{0}{0}\Longrightarrow\frac{\cancel{(x-1)}(4x-3)}{\cancel{(x-1)}(5x-3)}=\frac{4x-3}{5x-3}\xrightarrow{x\to 1}\frac{4-3}{5-3}=\boxed{\frac{1}{2}}$$

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$$\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x}=\frac{0}{0}\xrightarrow{x\to 0}\frac{1-3x-(3x+1)}{x}=\frac{1-3x-3x-1}{x}=\frac{-6x}{x}=\boxed{-6}$$

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$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}=\frac{0}{0}=\frac{\cancel{(\sqrt{x}-2)}(\sqrt{x}+2)}{\cancel{(\sqrt{x}-2)}}=\sqrt{x}+2\xrightarrow{x\to 4}\sqrt{4}+2=\boxed{4}$$

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$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}\times\frac{x+\sqrt{2x}}{x+\sqrt{2x}}=\frac{x^2-2x}{(2x^2-x-6)(x+\sqrt{2x})}=\frac{x\cancel{(x-2)}}{\cancel{(x-2)}(2x+3)(x+\sqrt{2x})}$$

$$=\frac{x}{(2x+3)(x+\sqrt{2x})}=\frac{2}{7\times 4}=\boxed{\frac{1}{14}}$$

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$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}=\frac{0}{0}\Longrightarrow\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{2+\sqrt{5-x}}{2+\sqrt{5-x}}=\frac{(1-\sqrt{x})(2+\sqrt{5-x})}{4-5+x}$$

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

$$\xrightarrow{x\to 1}\frac{2+\sqrt{4}}{-(1+\sqrt{1})}=\frac{4}{-2}=\boxed{-2}$$

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

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

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$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}=\frac{0}{0}\times\frac{\sqrt[3]{x^2}+1+\sqrt[3]{x}}{\sqrt[3]{x^2}+1+\sqrt[3]{x}}\times\frac{\sqrt{3x+\sqrt{x}}+2}{\sqrt{3x+\sqrt{x}}+2}=\frac{(3x+\sqrt{x}-4)(3)}{(x-1)(4)}$$

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$$=\frac{3\left((3x-3)+(\sqrt{x}-1)\right)}{4(x-1)}=\frac{3\left(3\cancel{(\sqrt{x}-1)}(\sqrt{x}+1)+\cancel{(\sqrt{x}-1)}\right)}{4\cancel{(\sqrt{x}-1)}(\sqrt{x}+1)}$$ ۷

$$=\frac{3\left(3(\sqrt{x}+1)+1\right)}{4(\sqrt{x}+1)}\xrightarrow{x\to 1}\frac{3(3\times 2+1)}{4(2)}=\boxed{\frac{21}{8}}$$

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

$$=\frac{\cos^2x+1-\cos x}{1-\cos x}\xrightarrow{x\to\pi}\frac{(-1)^2+1-(-1)}{1-(-1)}=\frac{1+1+1}{1+1}=\boxed{\frac{3}{2}}$$ ۸

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$$\lim_{x\to\frac{\pi}{4}}\frac{1-\tan x}{\sin x-\cos x}=\frac{0}{0}=\frac{\left(1-\frac{\sin x}{\cos x}\right)}{\sin x-\cos x}=\frac{\frac{\cancel{(\cos x-\sin x)}}{\cos x}}{-\cancel{(\cos x-\sin x)}}=\frac{\frac{1}{\cos x}}{-1}$$

$$\xrightarrow{x\to\frac{\pi}{4}}=-\frac{1}{\cos\frac{\pi}{4}}=-\frac{1}{+\frac{1}{\sqrt{2}}}=\boxed{-\sqrt{2}}$$ ۹

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$$\lim_{x\to\frac{3\pi}{4}}\frac{\tan^2x-1}{\cos(2x)}=\frac{0}{0}=\frac{(\tan x-1)(\tan x+1)}{\cos^2x-\sin^2x}=\frac{(\tan-1)(\tan+1)}{(\cos x-\sin x)(\cos x+\sin x)}$$

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$$=\frac{(\tan-1)\left(\frac{\cancel{\sin x+\cos x}}{\cos x}\right)}{(\cos x-\sin x)\cancel{(\cos x+\sin x)}}=\frac{(\tan-1)\left(\frac{1}{\cos x}\right)}{(\cos x-\sin x)}\xrightarrow{x\to\frac{3\pi}{4}}\frac{(-1-1)\left(\frac{1}{-\frac{1}{\sqrt{2}}}\right)}{\left(-\frac{\sqrt{2}}{2}-\frac{\sqrt{2}}{2}\right)}$$ ۱۰

$$=\frac{(-2)(-\sqrt{2})}{(-\sqrt{2})}=\boxed{-2}$$