نام و نام خانوادگی: علی ربانی پاسخنامه تکلیف شماره: ۲۰ کلاس یازدهم: A

۱-
$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3}=\frac{0}{0}\Rightarrow \frac{4(x-1)(x-\frac{3}{4})}{5(x-1)(x-\frac{1}{5})}=\frac{4-\frac{3}{4}}{5-\frac{1}{5}}=\frac{\frac{13}{4}}{\frac{24}{5}}=\frac{1}{2}$$

۲-
$$\lim_{x\to 0}\frac{|x^2-1|-|x^3+1|}{x}=\frac{1-x^2-x^3-1}{x}=\frac{-x^2}{x}=-x=0$$
$$\frac{0}{0}\ \text{مبهم}\Rightarrow$$

۳-
$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}=\frac{0}{0}\ \text{مبهم}\Rightarrow\frac{(\sqrt{x}-2)(\sqrt{x}+2)}{\sqrt{x}-2}=\sqrt{x}+2=4$$

۴-
$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-3x-2}=\frac{0}{0}\ \text{مبهم}\Rightarrow\frac{\sqrt{x}(\sqrt{x}-\sqrt{2})}{(x-2)(2x+1)}=\frac{\sqrt{2}}{(2\sqrt{2})(4)}=\frac{1}{16}$$
$$(\sqrt{x}-\sqrt{2})(\sqrt{x}+\sqrt{2})$$

۵-
$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}=\frac{0}{0}\ \text{مبهم}\Rightarrow\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{1+\sqrt{x}}{1+\sqrt{x}}\times\frac{2+\sqrt{5-x}}{2+\sqrt{5-x}}=\frac{1-x}{4-5+x}\times\frac{4}{2}=$$
$$\frac{1-x}{-1+x}\times\frac{4}{2}=-1\times 2=-2$$

۶-
$$\lim_{x\to 4}\frac{\sqrt{2x+4}-4}{\sqrt[3]{5x+7}-3}=\frac{0}{0}\ \text{مبهم}\Rightarrow\ ?=\frac{\sqrt{2x+4}-4}{\sqrt{5x+7}-3}\times\frac{\sqrt{2x+4}+4}{\sqrt{2x+4}+4}\times\frac{\sqrt[3]{(5x+7)^2}+3\sqrt[3]{5x+7}+9}{\sqrt[3]{(5x+7)^2}+3\sqrt[3]{5x+7}+9}=$$
$$\frac{2x+4-16}{5x+7-27}\times\frac{27}{8}=\frac{2(x-4)}{5(x-4)}\times\frac{27}{8}=\frac{81}{40}$$

-٧

$$\lim_{x\to 1} \frac{\sqrt{x^2+\sqrt{x}}-2}{\sqrt[3]{x}-1} = \frac{0}{0} \text{ مبهم} \Rightarrow \frac{\sqrt{x^2+\sqrt{x}}-2}{\sqrt[3]{x}-1} \times \frac{\text{مرافق}}{\text{مرافق}} \times \frac{\text{مرافق}}{\text{مرافق}} = \frac{x^2+\sqrt{x}-2}{x-1} \times \frac{3}{4} =$$

$$\sqrt{x^2+\sqrt{x}}+2 \qquad \left(\sqrt[3]{x^2}+1+\sqrt[3]{x}\right)$$

$$\overset{\text{hop}}{\Longrightarrow} \frac{2+\frac{1}{4}}{1} \times \frac{3}{4} = \boxed{\frac{21}{8}}$$

-٨

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

$x\to\pi$

-٩

$$\lim_{x\to\frac{\pi}{4}} \frac{1-\tan x}{\sin x-\cos x} \overset{\text{hop}}{\Longrightarrow} \frac{-(1+\tan^2 x)}{\cos x+\sin x} = \frac{-2}{\frac{\sqrt{2}}{2}+\frac{\sqrt{2}}{2}} = \frac{-2}{\sqrt{2}} = \boxed{-\sqrt{2}}$$

$x\to\frac{\pi}{4}$

-١٠

$$\lim_{x\to\frac{\pi}{4}} \frac{\tan^2 x-1}{\cos 4x} = \frac{0}{0} \text{ مبهم} \Rightarrow \frac{\tan^2 x-1}{\frac{1-\tan^2 x}{1+\tan^2 x}} = -(1+\tan^2 x) = \boxed{-2}$$

$x\to\frac{\pi}{4}$