پرنیا پارسیان یازدهم تجربی A — تالیف ۳۰

۱۷٫۵

① $\lim_{x\to 1}\dfrac{4x^2-7x+3}{5x^2-8x+3}=\dfrac{0}{0}$ مبهم $=\lim_{x\to 1}\dfrac{(x-1)(4x-3)}{(x-1)(5x-3)}$

$=\lim_{x\to 1}\dfrac{4x-3}{5x-3}=\dfrac{1}{2}$

۲

② $\lim_{x\to 0}\dfrac{|3x-1|-|3x+1|}{x}=\dfrac{0}{0}$ مبهم

۲

$0^+:\ \dfrac{|0^+-1|-|0^++1|}{x}=\dfrac{-3x+1-3x-1}{x}=-6$

$0^-:\ \dfrac{|0^--1|-|0^-+1|}{x}=\dfrac{-3x+1-3x-1}{x}=-6$

③ $\lim_{x\to 4}\dfrac{x-4}{\sqrt{x}-2}=\dfrac{0}{0}$ مبهم $\Rightarrow \dfrac{(\sqrt{x}-2)(\sqrt{x}+2)}{\sqrt{x}-2}=\lim_{x\to 4}\sqrt{x}+2=4$ ۲

④ $\lim_{x\to 2}\dfrac{x-\sqrt{2x}}{2x^2-x-6}=\dfrac{0}{0}$ مبهم $\Rightarrow \dfrac{x-\sqrt{2x}}{(x-2)(x+\frac{3}{2})}\times\dfrac{\text{مزدوج}}{\text{مزدوج}}=\dfrac{x^2-2x}{(x-2)(x+\frac{3}{2})(4)}$ ۱

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

Hop $\rightarrow \dfrac{1-\frac{2}{2\sqrt{2x}}}{4x-1}=\dfrac{1}{14}$

⑤ $\lim_{x\to 1}\dfrac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\dfrac{\text{مزدوج}}{\text{مزدوج}}\times\dfrac{\text{مزدوج}}{\text{مزدوج}}=\dfrac{(1-x)\times 4}{(4-5+x)\times 2}=\dfrac{(1-x)4}{(-1+x)\times 2}=\dfrac{4-4x}{-2+2x}$

۲

$=\dfrac{2(2-2x)}{-(2-2x)}=-2$

⑥ $\lim_{x\to 4}\dfrac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}=\dfrac{0}{0}$ مبهم $\times\dfrac{\text{مزدوج}}{\text{مزدوج}}\times\dfrac{\text{مزدوج}}{\text{مزدوج}}=\dfrac{(3x+14-16)\times 27}{(5x+7-27)\times 8}$ ۲

$=\dfrac{(3x-12)(27)}{(5x-20)\times 8}=\dfrac{(x-4)\times 3\times 27}{(x-4)\times 5\times 8}=\dfrac{81}{40}$

(٧)

$$\lim_{x\to ١} \frac{\sqrt{٣x+\sqrt{x}}-٢}{\sqrt[٣]{x}-١} \times \frac{\text{م.ض}}{\text{م.ض}} \times \frac{\text{م.ف}}{\text{م.ف}} = \frac{(٣x+\sqrt{x}-٤)\times ٣}{(x-١)\times ٤}$$

$$= \frac{٩x+٣\sqrt{x}-١٢}{٤x-٤} = \frac{٣(\sqrt{x}-١)(\sqrt{x}+\frac{٤}{٣})}{٤(\sqrt{x}-١)(\sqrt{x}+١)} = \frac{٧}{٨}$$

٥/٥

(٨) ٥

$$\lim_{x\to\pi} \frac{١+\cos^٣ x}{\sin^٢ x} = \frac{(١+\cos x)(١+\cos^٢ x-\cos x)}{(١-\cos x)(١+\cos x)} = \frac{١+١-(-١)}{٢} = \frac{٣}{٢}$$

$(١-\cos x) = ٢$

(٩)

$$\lim_{x\to\frac{\pi}{٤}} \frac{١-\tan x}{\sin x-\cos x} = \frac{\frac{\cos x-\sin x}{\cos x}}{-(\cos x-\sin x)} = -\frac{١}{\cos x} = \frac{١}{-\frac{\sqrt{٢}}{٢}} = -\sqrt{٢}$$

٥

(١٠)

$$\lim_{x\to\frac{٣\pi}{٤}} \frac{\tan^٢ x-١}{\cos ٢x} = \frac{\frac{\sin^٢ x-\cos^٢ x}{\cos^٢ x}}{-(\sin^٢ x-\cos^٢ x)} = -\frac{١}{\cos^٢ x} = -\frac{١}{\frac{٢}{٤}} = -٢$$

٥

۷) رفع ابهام $\rightarrow \lim_{x \to 1} \dfrac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} \times \dfrac{\sqrt{3x+\sqrt{x}}+2}{\sqrt[3]{x^2}+1+\sqrt[3]{x}} \times \dfrac{3}{3}$

$\xrightarrow{HOP} \dfrac{3}{4} \times \dfrac{3+\dfrac{1}{2\sqrt{x}}}{1} = \dfrac{3}{4} \times \dfrac{7}{2} = \dfrac{21}{8}$