① $\lim_{x\to 1} \frac{4x^2-7x+3}{5x^2-4x+3} \overset{hop}{=} \frac{8x-7}{10x-4} = \frac{1}{2}$

نوشتن ارجی - یا زدن سری ⑧

② $\lim_{x\to 0} \frac{|3x-1|-|3x+1|}{x} = \frac{1-3x-3x-1}{x} = \frac{-6x}{x} \overset{hop}{\to} \frac{0-6}{1} = -6$

④ $\lim_{x\to 2} \frac{x-\sqrt{3x}}{3x^2-x-6} \overset{hop}{=} \frac{1-\frac{3}{2\sqrt{3x}}}{6x-1} \overset{x=2}{\to} \frac{1-\frac{1}{2}}{11} = \frac{1}{22}$

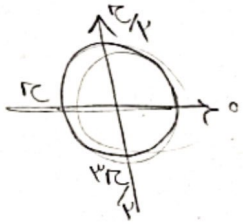
③ $\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2} \overset{hop}{\to} \frac{1-0}{\frac{1}{2\sqrt{x}}-0} \overset{x=4}{\to} \frac{1}{\frac{1}{4}} = 4$

⑤ $\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} \overset{hop}{\to} \frac{\frac{-1}{2\sqrt{x}}}{0+\frac{+1}{2\sqrt{5-x}}} \overset{x=1}{\to} \frac{\frac{-1}{2}}{\frac{1}{4}} = -2$

⑥ $\lim_{x\to 4} \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} \overset{hop}{\to} \frac{\frac{3}{2\sqrt{3x+4}}}{\frac{5}{3\sqrt[3]{(5x+7)^2}}} = \frac{\frac{3}{8}}{\frac{5}{27}}$

⑦ $\lim \frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} \overset{hop}{\to} \frac{3+\frac{1}{2\sqrt{x}}}{\frac{2\sqrt{3x+\sqrt{x}}}{\frac{1}{3\sqrt[3]{x^2}}}} = \frac{\frac{7}{2}}{\frac{4}{1}} = \frac{21}{8}$

⑧ $\lim_{x\to \pi} \frac{1+\cos^3 x}{\sin^2 x} = \frac{(1+\cos)(1-\cos+\cos^2)}{(1-\cos)(1+\cos)} = \frac{3}{2}$




⑨ $\lim_{x\to \frac{\pi}{4}} \frac{1-\tan}{\sin x-\cos x} = \frac{1-\frac{\sin}{\cos}}{\sin-\cos} = \frac{\frac{\cos-\sin}{\cos}}{\sin-\cos} = \frac{1}{\cos} = \frac{1}{\frac{\sqrt{2}}{2}} = \frac{2}{\sqrt{2}}$

(10) $\lim_{x \to \frac{3\pi}{4}} \frac{\tan^2 x - 1}{\cos 4x} = \frac{\frac{\sin^2 x - \cos^2 x}{\cos^2 x}}{\cos^2 x - \sin^2 x} = \frac{-1}{\cos 2x} = \frac{-1}{\left(\frac{\sqrt{2}}{2}\right)^2} = -2$

$\cos 4x \downarrow$

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

$-1$

$\left(\frac{\sqrt{2}}{2}\right)^2 \quad \frac{1}{2}$

نوشین اربیه - یازدهم سری B