

نام و نام خانوادگی .. علی .. کلاس .. ۳ .. پاسخنانه تشریحی تکلیف شماره .. یازدهم ..

$\lim_{x \rightarrow 1} \frac{2x^2 - 1x + 3}{5x^2 - 1x + 3} \stackrel{H\&P}{\Rightarrow} \frac{1x - 1}{1x - 1} = \frac{1}{1} \checkmark$	<p>۱</p> <p>۲</p>
$\lim_{x \rightarrow 0} \frac{ 3x-1 - 3x+1 }{x} = \frac{1-3x - 3x-1}{x} = \frac{-6x}{x} = -6 \checkmark$	<p>۲</p> <p>۲</p>
$\lim_{x \rightarrow 4} \frac{x-4}{\sqrt{x}-2} \times \frac{\sqrt{x}+2}{\sqrt{x}+2} = \frac{x-4}{x-4} \times \frac{4}{4} = \frac{4}{1} \checkmark$	<p>۳</p> <p>۲</p>
$\lim_{x \rightarrow 2} \frac{x-\sqrt{2}x}{x^2-x-4} \times \frac{x+\sqrt{2}x}{x+\sqrt{2}x} = \frac{x^2-2x}{x^2-x-4} \times \frac{1}{x} \stackrel{H\&P}{\Rightarrow} \frac{2x-2}{x^2-x-4} \times \frac{1}{x} = \frac{2}{x} \times \frac{1}{x} = \frac{2}{x^2} \checkmark$	<p>۴</p> <p>۲</p>
$\lim_{x \rightarrow 1} \frac{1-\sqrt{x}}{2-\sqrt{4-x}} \times \frac{1+\sqrt{x}}{1+\sqrt{x}} \times \frac{2+\sqrt{4-x}}{2+\sqrt{4-x}} = \frac{1-x}{4-x+2x} \times \frac{4}{4} = \frac{1-x}{x-1} \times 4 = -4 \checkmark$	<p>۵</p> <p>۲</p>

$$\lim_{x \rightarrow f} \frac{\sqrt{3x+4} - f}{\sqrt{5x+7} - 3} \xrightarrow[\text{Hopital}]{\substack{\text{قرب درون} \\ \text{قرب درون}}}} \frac{3}{5} \times \frac{2\sqrt{3}}{2\sqrt{5}} = \frac{11}{5} \checkmark$$

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$$\lim_{x \rightarrow 1} \frac{\sqrt{3x+\sqrt{x}} - 2}{\sqrt{x} - 1} \times \frac{3x+\sqrt{x}-2}{3x+\sqrt{x}-2} \times \frac{2\sqrt{x}}{2\sqrt{x}} = \frac{3x+\sqrt{x}-2}{x-1} \times \frac{2}{2\sqrt{x}} \xrightarrow{\text{Hopital}} \frac{3+\frac{1}{2\sqrt{x}}}{1} \times \frac{2}{2\sqrt{x}}$$

$$= 3 + \frac{1}{\sqrt{x}} \times \frac{2}{2\sqrt{x}} = \frac{6}{\sqrt{x}} \times \frac{1}{\sqrt{x}} = \frac{6}{x} \checkmark$$

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$$\lim_{x \rightarrow \pi} \frac{1 + \cos^2 x}{\sin^2 x} = \frac{(1 + \cos x)(1 + \cos^2 x - \cos x)}{(1 + \cos x)(1 - \cos x)} = \frac{1 + x - 1}{+r} = \frac{1}{\sqrt{2}} \checkmark$$

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$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \tan^2 x}{\sin x - \cos x} \xrightarrow{\text{Hopital}} \frac{-2 \tan x \sec^2 x}{\cos x + \sin x} = \frac{-(1+1)}{\frac{\sqrt{2}}{\sqrt{2}}} = \frac{-2}{\sqrt{2}} = -\sqrt{2} \checkmark$$

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$$\lim_{x \rightarrow \frac{\pi}{4}} \frac{\tan^2 x - 1}{\cos x} \xrightarrow{\text{Hopital}} \frac{(1 + \tan^2 x) \cdot 2 \tan x \sec^2 x}{-\sin x} = \frac{(1+1)^2}{-1 \times 1} = \frac{-4}{1} = -4 \checkmark$$

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$$(\tan^2 x)' = (2 \tan x)(1 + \tan^2 x) = -2(2)$$