زهرا آقایی — یازدهم (دختران)

Subject: Date:

سوال ۱)

$$\lim_{x\to 1} \frac{4x^2-7x+3}{5x^2-8x+3} = \frac{0}{0} \xrightarrow{\text{hop}} \frac{8x-7}{10x-8} = \frac{1}{2}$$

سوال ۲)

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

سوال ۳)

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

سوال ۴)

$$\lim_{x\to 2} \frac{x-\sqrt{2x}}{2x^2-x-6} \times \frac{x+\sqrt{2x}}{x+\sqrt{2x}} \quad \left(\frac{0}{0}\right)$$

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

سوال ۵)

$$\lim_{x\to 1} \frac{\sqrt{3x+4}-3}{\sqrt[3]{5x+7}-2} \times \frac{\text{مزدوج}}{\text{مزدوج}} \quad \left(\frac{0}{0}\right)$$

$$= \frac{(3x+4-9)(25+10x+4)}{(5x+7-8)(3x+4+9)} = \frac{21}{40}$$

سوال ۶)

$$\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} \times \frac{\text{مزدوج}}{\text{مزدوج}} \quad \left(\frac{0}{0}\right)$$

$$= \frac{4\times(1-x)}{(4-5+x)\times 2} = -2$$

جابه‌جا نشد

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سوال ۶)

$$\lim_{x\to 1} \frac{\sqrt{x^2+\sqrt{x}}-2}{\sqrt[3]{x}-1} \overset{\frac{0}{0}}{=} \times \frac{\text{مزدوج}}{\text{مزدوج}} \times \frac{\text{مکعب}}{\text{مکعب}} =$$

$$\frac{(x^2+\sqrt{x}-4)(x^2+4)}{(x-1)(x^2+2x+4)} \times \frac{(x^2+3-\sqrt{x})}{(x^2+3-\sqrt{x})} = \frac{(9x-12)(x-1)x^3}{(x-1)(x^2+2x+4)} = \frac{-27}{8}$$

سوال ۸)

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

سوال ۹)

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

سوال ۱۰)

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