Subject: ( ) حساب دیفرانسیل ۱ Date: .....

(۱) $\lim_{x\to 1} \frac{6x^2 - \sqrt{x+3}}{5x^2 - 8x + 3} \overset{\text{(مثال)}}{=} \frac{8x-7}{10x-8} = \frac{1}{2}$

(۲) $\lim_{x\to 0} \frac{|\sqrt[3]{2x-1}| - |\sqrt[3]{2x+1}|}{x} = \frac{1 - \sqrt[3]{2x}\sqrt[3]{x} - 1}{x} = \frac{-\sqrt[3]{x}}{x} = -2$

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

(۴) $\lim_{x\to 2} \frac{x - \sqrt{2x}}{2x^2 - x - 6} = \frac{\sqrt{x}(\sqrt{x}-\sqrt{2})}{(x-2)(2x+3)(\sqrt{x}+\sqrt{2})} = \frac{\sqrt{x}}{(\sqrt{x}+\sqrt{2})(2x+3)} = \frac{\sqrt{2}}{(2\sqrt{2})(7)} = \frac{1}{14}$

(۵) $\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{3-x}} \times \frac{1+\sqrt{x}}{1+\sqrt{x}} \times \frac{2+\sqrt{3-x}}{2+\sqrt{3+x}} = \frac{(1-x)(2+\sqrt{3-x})}{(1+x)(1+\sqrt{x})} = \frac{2+\sqrt{3-x}}{1+\sqrt{x}} = \frac{2+\sqrt{2}}{1+\sqrt{1}} = \frac{4}{2} = 2$

(۶) $\lim_{x\to 2} \frac{\sqrt{2x+4} - 4}{\sqrt[3]{3x+2} - 2} \times \frac{\sqrt{2x+4}+4}{\sqrt{2x+4}+4} \times \frac{A}{A} = \frac{2(x-6)(A)}{3(x-6)(\sqrt{2x+4}+4)} = \frac{2}{3} \times \frac{27}{8} = \frac{9}{4}$

$A = \sqrt[3]{(3x+2)^2} + 4 + 2\sqrt[3]{3x+2}$

Arman

Subject : ( ) A Date :

$$\lim_{x\to 1} \frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} \times \frac{\sqrt{3x+\sqrt{x}}+2}{\sqrt{3x+\sqrt{x}}+2} \times \frac{\sqrt[3]{x^2}+1+\sqrt[3]{x}}{\sqrt[3]{x^2}+1+\sqrt[3]{x}} = \quad (7)$$

$$= \frac{(3x+\sqrt{x}-4)(A)}{(x-1)(\sqrt{3x+\sqrt{x}}+2)} \cdot \frac{(\sqrt{x}-1)(3\sqrt{x}+4)(A)}{(x-1)(\sqrt{3x+\sqrt{x}}+2)} \cdot \frac{(3\sqrt{x}+4)(A)}{(\sqrt{x}+1)(\sqrt{3x+\sqrt{x}}+2)}$$

$$\frac{V \times 3}{2 \times 4} = \left(\frac{21}{8}\right)$$

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

$$\left(\frac{3}{2}\right)$$

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

$$\lim_{x\to\frac{\pi}{6}} \frac{\tan^2 x-1}{\cos 2x} = \frac{\frac{\sin^2 x-\cos^2 x}{\cos^2 x}}{\frac{\cos 2x}{}} = \frac{-1}{\cos^2 x - \sin^2 x} = \frac{-1}{\cos 2x} = (-2) \quad (10)$$

$$\cos^2 x - \sin^2 x - 1$$

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