مهرنیا ریاضی تکلیف شماره

(۱)

$$\begin{cases} -2^{+}: & 2[2^{+}] + a[0^{+}] = 4 \\ -2^{-}: & 2[2^{-}] + a[0^{-}] = 4-a \end{cases}$$

(۲)

$$\lim_{x\to \frac{\pi}{4}^{-}} [2\sin^2 x - 1] = [2\times(\tfrac{1}{2})^{-} - 1] = [0^{-}] = -1$$

(۳)

$$\lim_{x\to -\frac{1}{2}} [8x^3 - x] = [8\times(\tfrac{-1}{2})^3 - (\tfrac{-1}{2})^{-}] = [8\times(\tfrac{-1}{8})^{-} + \tfrac{1}{2}] = [\tfrac{-1}{2}^{-}] = -1$$

(۴)

$$\lim_{x\to(-\frac{1}{2})^{-}} \frac{10x - 5 + [\frac{3}{x^2}]}{16x - [\frac{-2}{x^2}]} = \frac{10x - 5 + 11}{16x + 8}$$

$x < -\frac{1}{2} \to x^2 > \frac{1}{4}$, $\frac{1}{x^2} < 4$

$\frac{3}{x^2} < 12$, $\frac{2}{x^2} < 8$

$\frac{-2}{x^2} > -8$

(۵)

$$\frac{\sin^2 \pi x}{1+\cos \pi x} = \frac{1-\cos^2 \pi x}{1+\cos \pi x} = 1-\cos \pi x = 1+1 = 2$$

(۶)

$$\lim \frac{\sqrt{2x+3} - \sqrt{3x+4}}{1+\sqrt[3]{x}} \times \frac{1-\sqrt[3]{x} + \sqrt[3]{x^2}}{1-\sqrt[3]{x} + \sqrt[3]{x^2}} \times \frac{\sqrt{2x+3}+\sqrt{3x+4}}{\sqrt{2x+3}+\sqrt{3x+4}} = \frac{-3}{2}$$

(۷)

$$\lim_{x\to 1} \frac{2x - 7\sqrt{x} + 5}{2x - \sqrt{3x+1}} = \frac{(\sqrt{x}-1)(2\sqrt{x}-5)}{2x-\sqrt{3x+1}} \times \frac{2x+\sqrt{3x+1}}{2x+\sqrt{3x+1}} = -1{,}2$$