فاطمه دادخواه ۲۰ نام خدا

(۱)

$\frac{0}{0} \rightarrow \frac{x^2 - 7x + 12}{x^2 - 8x + 15} \rightarrow \frac{(4x-3)(4x-4)}{(5x-3)(5x-5)} = \frac{4x-3}{5x-3} = \frac{1}{2}$ ۴

$\rightarrow (x \to 1)$

(۲)

$0^+ \rightarrow \frac{3x - 1 - 3x - 1}{x} = -\frac{2}{x} = -\infty$

۹

$0^- \rightarrow \frac{1 - 3x - 3x - 1}{x} = -\frac{6x}{x} = -6$

(۳)

$\frac{0}{0} \rightarrow \frac{(\sqrt{x} - 2)(\sqrt{x} + 2)}{\sqrt{x} - 2} \rightarrow \sqrt{x} + 2 \rightarrow 4$ ۴

$x \to 4$

$\lim \to 4$

(۴)

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

$2x^2 - x - 6 = (2x+3)(2x-4)$

$x^2 - 2x \rightarrow x(x-2)$

$= \frac{1}{14}$

(۵)

$\lim \frac{1 - \sqrt{x}}{2 - \sqrt{5-x}} \times \frac{2 + \sqrt{5-x}}{2 + \sqrt{5-x}} = \frac{(1 - \sqrt{x})(2 + \sqrt{5-x})}{4 - 5 + x}$ ۴

-1

$x - 1 = (\sqrt{x} - 1)(\sqrt{x} + 1)$

$= -2$

$$\lim_{x \to 2} \frac{\sqrt{3x+2} - 2}{\sqrt[3]{5x+7} - 3} \times \frac{\sqrt{3x+2} + 2}{\sqrt{3x+2} + 2} \times \frac{\sqrt[3]{(5x+7)^2} + 3\sqrt[3]{5x+7} + 9}{1}$$

$$= \frac{3x+2-4}{5x+7-27} \times \frac{6}{12} = \frac{1}{5}$$

$$\lim_{x \to 0} \frac{\sqrt{3x+\sqrt{x}} - 2}{\sqrt[3]{x} - 1} \times \frac{\sqrt{3x+\sqrt{x}} + 2}{\sqrt{3x+\sqrt{x}} + 2} \times \frac{\sqrt[3]{x^2} + 1 + \sqrt[3]{x}}{\sqrt[3]{x^2} + 1 + \sqrt[3]{x}}$$

$$\rightarrow \frac{3}{4} \times \frac{5}{2} = \frac{15}{8}$$

$$\lim_{x \to \pi} \frac{(1+\cos x)(1+\cos^2 x - 6\cos x)}{(1-\cos x)(1+\cos x)} = \frac{-3}{2}$$

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

$$\lim_{x} \frac{\tan^2 x - 1}{\cos 2x} \rightarrow \frac{\sin^2 x - \cos^2 x}{\cos^2 x} = \frac{\sin^2 x - \cos^2 x}{\cos^2 x} =$$

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