

☆ افزایش ۲.

$$f(x) = r \left[\frac{r-x}{r} \right] + a \left[\frac{x+r}{r} \right]$$

$x \rightarrow -r$

$$\lim_{x \rightarrow -r^+} r \left[\frac{r - (-r)^+}{r} \right] + a \left[\frac{(-r)^+ + r}{r} \right] = r$$

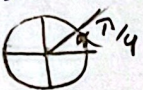
$$\lim_{x \rightarrow (-r)^-} r \left[\frac{r - (-r)^-}{r} \right] + a \left[\frac{(-r)^- + r}{r} \right] = r - a$$

$\left[\frac{a}{r} \right] = ?$

$\Rightarrow r - a = r \Rightarrow \boxed{a = r} \quad \left[\frac{r}{r} \right] = \boxed{0} \quad \checkmark$

سؤال (۲)

$$\lim_{x \rightarrow (\frac{\pi}{4})^-} [x \sin x - 1] = \left[x \times \left(\frac{1}{x} \right)^- - 1 \right] = [1^- - 1] = \boxed{-1}$$

$x \rightarrow (\frac{\pi}{4})^-$ 

سؤال (۳)

$$\lim_{x \rightarrow -\frac{1}{r}} [1/x^r - x] \Rightarrow \left[1 \left(-\frac{1}{x} \right) + \frac{1}{r} \right] = \left[-\frac{1}{r} \right] = \boxed{-1} \quad \checkmark$$

سؤال (۴)

$$\lim_{x \rightarrow (-\frac{1}{r})^-} \frac{10x - 5 + \left[\frac{r}{x^r} \right]}{14x - \left[-\frac{r}{x^r} \right]} = \lim_{x \rightarrow (-\frac{1}{r})^-} \frac{10x - 5 + \left[\left(-\frac{1}{r} \right)^- - r \right]}{14x - \left[-\frac{r}{\left(-\frac{1}{r} \right)^r} \right]}$$

$[-\frac{r}{(-\frac{1}{r})^r }] = -1$

$$= \frac{-5 - 5 + 11}{0^-} = \frac{1}{0^-} = \boxed{-\infty}$$

سؤال (۵)

$$\lim_{x \rightarrow 1^+} \frac{\sin^2 \pi x}{[x] + \cos \pi x} = \frac{\sin^2 \pi x}{1 + \cos \pi x} = \frac{\sin^2 \pi}{1 + \cos \pi} = \frac{0}{0} \rightarrow \text{نیچا}$$

$$\lim_{x \rightarrow 1^+} \frac{1 - \cos^2 \pi x}{1 + \cos \pi x} = \lim_{x \rightarrow 1^+} \frac{(1 + \cos \pi x)(1 - \cos \pi x)}{(1 + \cos \pi x)} = \lim_{x \rightarrow 1^+} (1 - \cos \pi x) = 1 - (-1) = \boxed{2}$$

سؤال (۶)

$$\lim_{x \rightarrow -1} \frac{\sqrt{rx+r} - \sqrt{rx+\xi}}{1 + \sqrt[r]{x}} = \frac{0}{0} \Rightarrow \text{نیچا} \Rightarrow \text{hopital}$$

$$\lim_{x \rightarrow -1} \frac{\frac{r}{2\sqrt{rx+r}} - \frac{r}{2\sqrt{rx+\xi}}}{\frac{1}{r\sqrt[r]{x^r}}} = \frac{-\frac{1}{r}}{-\frac{1}{r}} = \boxed{\frac{r}{r}} \quad \checkmark$$

$$\lim_{x \rightarrow 1} \frac{2x - \sqrt{2x} + a}{2x - \sqrt{2x+1}} = \frac{0}{0} \leadsto \text{بىخالى}$$

سؤال ٧

$$x \rightarrow 1$$

$$\Rightarrow \text{hopital} \quad \lim_{x \rightarrow 1} \frac{2 - \frac{1}{\sqrt{2x}}}{2 - \frac{1}{\sqrt{2x+1}}} = \frac{2 - \frac{1}{\sqrt{2}}}{2 - \frac{1}{\sqrt{3}}} = \frac{-\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{3}}} = -\frac{1}{\sqrt{2}} = \boxed{-\frac{1}{\sqrt{2}}}$$

$$\lim_{x \rightarrow 0} \frac{a + \sqrt{bx+c}}{x} = \frac{1}{f} \leadsto \frac{a + \sqrt{bx+c}}{0} = \frac{a + \sqrt{c}}{0} = \frac{0}{0} \Rightarrow a + \sqrt{c} = 0 \Rightarrow a = -\sqrt{c}$$

سؤال ٨

$$\frac{ab}{c} = ?$$

$$\Rightarrow \text{بىخالى} \rightarrow \text{hopital} \quad \lim_{x \rightarrow 0} \frac{\frac{b}{x} \sqrt{bx+c}}{1} = \frac{1}{f} \Rightarrow 2b = \sqrt{c}$$

$$\Rightarrow \frac{ab}{c} = \frac{-\sqrt{c} + \frac{\sqrt{c}}{2}}{c} = \frac{-\frac{c}{2}}{c} = \boxed{-\frac{1}{2}}$$

$$\lim_{x \rightarrow -r^+} \frac{f + k \left[\frac{x}{a} \right]}{\sin x} = +\infty \Rightarrow \lim_{x \rightarrow -r^+} \frac{f + k \left[\frac{-r^+}{a} \right]}{0} = \frac{f + k[-r]}{0}$$

سؤال ٩

$$x \rightarrow -r^+ \Rightarrow \frac{f - rk}{0^+} = +\infty \Rightarrow f - rk > 0 \Rightarrow k > r \leadsto k = r^+$$

$$[-k] = ?$$

$$\Rightarrow [-r^+] = \boxed{-r}$$

$$\lim_{x \rightarrow \infty} \frac{b \sqrt{r + \sqrt{x}} - rb}{ax - b} = \frac{b \sqrt{r + r} - rb}{\infty a - b} = \frac{0}{\infty a - b} = \frac{0}{\infty}$$

سؤال ١٢

$$x \rightarrow \infty$$

$$\infty a - b = \infty \Rightarrow \infty a = b$$

$$\Rightarrow \text{بىخالى} \leadsto \text{hopital} \quad b \frac{1}{2\sqrt{x}} \quad \checkmark$$

$$\lim_{x \rightarrow \infty} \frac{b \frac{1}{2\sqrt{x}}}{a} \leadsto \frac{bx \frac{1}{2\sqrt{x}}}{\frac{f}{a}} = \boxed{\frac{1}{a}}$$