

$$f(x) = 2 \left[\frac{2-x}{2} \right] + a \left[\frac{x+2}{2} \right]$$

$$\left[\frac{a}{2} \right] = 9 \quad \left[\frac{2}{2} \right] = 0$$

$$\lim_{x \rightarrow -2} f(x) = \begin{cases} x \rightarrow -2^+ \rightarrow 2 \left[2 \right] + a \left[0^+ \right] = 2 \left[2 \right] + a \left[0^+ \right] = 4 + a \\ x \rightarrow -2^- \rightarrow 2 \left[2^+ \right] + a \left[0^- \right] = 4 - a \end{cases} \Rightarrow \begin{cases} 4 + a = 4 \\ 4 - a = 4 \end{cases} \Rightarrow a = 0$$

$$\lim_{x \rightarrow \left(\frac{\pi}{4}\right)^-} [2 \sin x - 1] = \lim_{x \rightarrow \left(\frac{\pi}{4}\right)^-} \left[2 \sin \left(\frac{\pi}{4} \right) - 1 \right] = \lim_{x \rightarrow \frac{\pi}{4}} [0] = 0$$

$$\lim_{x \rightarrow -\frac{1}{2}} [1/x^2 - x] = \lim_{x \rightarrow -\frac{1}{2}} \left[-1 + \frac{1}{x} \right] = \lim_{x \rightarrow -\frac{1}{2}} \left[-\frac{1}{x} \right] = -2$$

$$\lim_{x \rightarrow \left(-\frac{1}{2}\right)^-} \frac{\log x - x + \left[\frac{x}{x^2} \right]}{1/x - \left[-\frac{x}{x^2} \right]} = \lim_{x \rightarrow -\frac{1}{2}} \frac{\log x - x + \frac{1}{x}}{1/x + x} = \frac{1}{0^-} = -\infty$$

$$x < -\frac{1}{2} \Rightarrow x^2 > \frac{1}{4} \Rightarrow \frac{1}{x^2} < 4 \Rightarrow \begin{cases} x^2 < 4 \\ \frac{1}{x^2} > \frac{1}{4} \end{cases}$$

$$\lim_{x \rightarrow 1^+} \frac{\sin^2 x}{[x] + \cos x} = \lim_{x \rightarrow 1^+} \frac{\sin^2 x}{1 + \cos x} = \lim_{x \rightarrow 1^+} \frac{1 - \cos^2 x}{1 + \cos x} = \lim_{x \rightarrow 1^+} (1 - \cos x) = 0$$

$$\lim_{x \rightarrow -1} \frac{\sqrt{px+p} - \sqrt{px+\varepsilon}}{1+\sqrt{x}} = \lim_{x \rightarrow -1} \frac{\sqrt{px+p} - \sqrt{px+\varepsilon}}{1+\sqrt{x}} \times \frac{\sqrt{px+p} + \sqrt{px+\varepsilon}}{\sqrt{px+p} + \sqrt{px+\varepsilon}} = \lim_{x \rightarrow -1} \frac{-x-1}{1+\sqrt{x}-\sqrt{x}} \times \frac{p}{p} = \lim_{x \rightarrow -1} \frac{-x-1}{1+x} \times \frac{p}{p} = -\frac{p}{p}$$

دول، $\lim_{x \rightarrow -1} \frac{\sqrt{px+p} - \sqrt{px+\varepsilon}}{1+\sqrt{x}} = \lim_{x \rightarrow -1} \frac{-x-1}{1+x} \times \frac{p}{p} = -\frac{p}{p}$ ✓

$$\lim_{x \rightarrow 1} \frac{px - \sqrt{px} + a}{px - \sqrt{px+1}} \times \frac{px + \sqrt{px+1}}{px + \sqrt{px+1}} = \lim_{x \rightarrow 1} \frac{px - \sqrt{px} + a}{\varepsilon x^2 - px - 1} \times \lim_{x \rightarrow 1} \frac{(x-1)(\sqrt{px} - a)}{\varepsilon(x-1)(x+\frac{1}{\varepsilon})} = \lim_{x \rightarrow 1} \frac{-px\varepsilon}{\varepsilon(x)(\frac{a}{\varepsilon})} = \boxed{-11p}$$

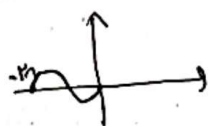
دول، $\lim_{x \rightarrow 1} \frac{px - \sqrt{px} + a}{px - \sqrt{px+1}} \stackrel{\text{hop}}{=} \lim_{x \rightarrow 1} \frac{p - \frac{1}{\sqrt{x}}}{p - \frac{1}{\sqrt{px+1}}} = \lim_{x \rightarrow 1} \frac{p - \frac{1}{\sqrt{x}}}{p - \frac{1}{\sqrt{2}}} = \boxed{-11p}$ ✓

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

$$\lim_{x \rightarrow 0} \frac{a + \sqrt{bx+c}}{x} \stackrel{\text{hop}}{=} \frac{b}{\sqrt{bx+c}} = \frac{b}{\sqrt{c}} = \frac{1}{\varepsilon} \Rightarrow \frac{b}{\sqrt{c}} = \frac{1}{p}$$

$$\frac{ab}{c} = \frac{(-\sqrt{c})b}{c} = \frac{-b}{\sqrt{c}} = \boxed{-\frac{1}{p}} \quad \checkmark$$

$$\lim_{x \rightarrow -\pi} \frac{\varepsilon + h\left[\frac{x}{\pi}\right]}{\sin x} = +\infty$$



$$\begin{aligned} \varepsilon - p_h > 0 &\Rightarrow p > h \\ \varepsilon - p_h < 0 &\Rightarrow \frac{\varepsilon}{p} < h \\ &\Rightarrow \frac{\varepsilon}{p} < h < p \\ &\Rightarrow -p < -h < -\frac{\varepsilon}{p} \\ &\quad [-h] = -p \end{aligned}$$

$$\lim_{x \rightarrow -\pi} \frac{\varepsilon + h\left[\frac{x}{\pi}\right]}{\sin x} = \begin{cases} x \rightarrow -\pi^+ & \frac{\varepsilon + h[-\pi^+]}{0^+} = \frac{\varepsilon - p_h}{0^+} \\ x \rightarrow -\pi^- & \frac{\varepsilon + h[-\pi^-]}{0^-} = \frac{\varepsilon - p_h}{0^-} \end{cases}$$

$$\lim_{x \rightarrow 1} \frac{b\sqrt{px+p} - pb}{ax-b} = \frac{0}{0} \stackrel{\text{hop}}{=} \frac{b(\frac{1}{p}x - \frac{1}{p})}{a(\frac{1}{p}\sqrt{px+p} - \frac{1}{p})} = \frac{1(\frac{1}{p})}{p(1)} = \boxed{\frac{1}{p}}$$

$1a - b = 0 \Rightarrow 1a = b \Rightarrow \frac{b}{a} = 1$ ✓