

نکته: با حقیق تکلیف ۲: ω و ω^2 ها

۱۹, ۷۵

$$\lim_{x \rightarrow 1} \frac{\varepsilon_2^x - \omega_2 + \omega_2}{\omega_2 x^2 - \omega_2 + \omega_2} \xrightarrow{\text{HOP}} \frac{1x - \omega_2}{1x - \omega_2} = \frac{1}{1} \checkmark$$

سوال (۱) (۲)

$$\lim_{x \rightarrow \infty} \frac{\overset{\ominus}{1/x} - \overset{\oplus}{1/x+1}}{x} = \frac{1 - \frac{1}{x} - \frac{1}{x} - 1}{x} = \frac{-\frac{2}{x}}{x} = -\frac{2}{x^2} \checkmark$$

سوال (۲) (۲)

$$\lim_{x \rightarrow \varepsilon} \frac{x - \varepsilon}{\sqrt{x} - \varepsilon} \xrightarrow{\text{HOP}} \frac{1}{\frac{1}{\sqrt{x}}} = \varepsilon \checkmark$$

سوال (۳) (۲)

$$\lim_{x \rightarrow \varepsilon} \frac{x - \sqrt{x}}{x^2 - x - \varepsilon} \xrightarrow{\text{HOP}} \frac{1 - \frac{1}{2\sqrt{x}}}{\varepsilon x - 1} = \frac{1}{\varepsilon} = \frac{1}{\varepsilon} \checkmark$$

سوال (۴) (۲)

$$\lim_{x \rightarrow 1} \frac{1 - \sqrt{x}}{x - \sqrt{x}} \xrightarrow{\text{HOP}} \frac{-\frac{1}{2\sqrt{x}}}{-1} = \frac{-\frac{1}{2\sqrt{1}}}{-1} = \frac{1}{2} \checkmark$$

سوال (۵) (۱, ۷۵)

$$\lim_{x \rightarrow \varepsilon} \frac{\sqrt{x+\varepsilon} - \varepsilon}{\sqrt{x+\varepsilon} - \varepsilon} \xrightarrow{\text{HOP}} \frac{\frac{1}{2\sqrt{x+\varepsilon}}}{\frac{1}{2\sqrt{x+\varepsilon}}} = \frac{1}{1} = \frac{1}{\varepsilon^0} \checkmark$$

سوال (۶) (۲)

$$\lim_{x \rightarrow 1} \frac{\sqrt{x+\sqrt{x}} - \sqrt{x}}{\sqrt{x} - 1} \xrightarrow{\text{HOP}} \frac{\frac{1}{2\sqrt{x+\sqrt{x}}} + \frac{1}{2\sqrt{x}}}{\frac{1}{2\sqrt{x}}} = \frac{\frac{1}{2\sqrt{x}} + \frac{1}{2\sqrt{x}}}{\frac{1}{2\sqrt{x}}} = \frac{\frac{1}{\sqrt{x}}}{\frac{1}{2\sqrt{x}}} = \frac{1}{\sqrt{x}} \cdot \frac{2\sqrt{x}}{1} = 2 \checkmark$$

سوال (۷) (۲)

$$\lim_{n \rightarrow \infty} \frac{1 + \cos^n}{\sin^n} = \frac{(1 + \cos^n)(1 - \cos^n \cos^n)}{1 - \cos^{2n}} = \frac{1 - \cos^{2n} + \cos^{2n} - \cos^{2n}}{1 - \cos^{2n}} = \frac{1 - \cos^{2n}}{1 - \cos^{2n}} = 1 \checkmark$$

سوال (۸) (۲)

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \tan x}{\sin x - \cos x} = \frac{-\frac{\cos x}{\sin^2 x}}{\sin x - \cos x} = \frac{-\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}}} = \frac{-\frac{1}{\sqrt{2}}}{0} = -\sqrt{2} \checkmark$$

سوال (۹) (۲)

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\tan x - 1}{\cos x} = \frac{\frac{\sin x}{\cos x} - 1}{\cos x} = \frac{\frac{\sin x - \cos x}{\cos x}}{\cos x} = \frac{\sin x - \cos x}{\cos^2 x} = \frac{1 - 1}{\frac{1}{2}} = 0 \checkmark$$

سوال (۱۰) (۲)