242)14 a) $\lim_{x\to 2} \left(\frac{1-\sqrt{3-x}}{x-2}\right) = \left(\frac{0}{0}\right)$ IND

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

$$= \lim_{x\to 2} \frac{\cancel{-2+x}}{\cancel{(x-2)}(1+\sqrt{3-x})} = \lim_{x\to 2} \frac{1}{1+\sqrt{3-x}} = \boxed{\frac{1}{2}}$$

b) $\lim_{x\to 0} \frac{\sqrt{x+9}-3}{x^2} = \left(\frac{0}{0}\right)$ IND

$$\lim_{x\to 0} \frac{(\sqrt{x+9}-3)(\sqrt{x+9}+3)}{(\sqrt{x+9}+3)\,x^2} = \lim_{x\to 0} \frac{x+\cancel{9}-\cancel{9}}{(\sqrt{x+9}+3)\cdot x^2} =$$

$$= \lim_{x\to 0} \frac{\cancel{x}}{(\sqrt{x+9}+3)\cdot x^{\cancel{2}}} = \lim_{x\to 0} \frac{1}{(\sqrt{x+9}+3)\cdot x} = \left(\frac{1}{0}\right)$$

Alb. limiteak

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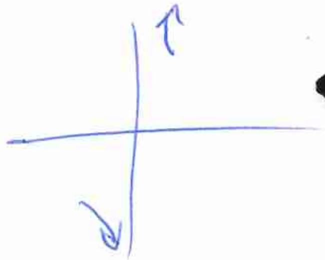
$$\lim_{x\to 0^-} \frac{1}{(\sqrt{x+9}+3)\cdot x} = \frac{1}{0^-} = -\infty$$

$$\lim_{x\to 0^+} \frac{1}{(\sqrt{x+9}+3)x} = \frac{1}{0^+} = +\infty$$



c) $\lim_{x\to 0} \frac{\sqrt{1+x}-\sqrt{1-x}}{3x} = \left(\frac{0}{0}\right)$ IND

$$\lim_{x\to 0} \frac{(\sqrt{1+x}-\sqrt{1-x})(\sqrt{1+x}+\sqrt{1-x})}{3x\,(\sqrt{1+x}+\sqrt{1-x})} = \lim_{x\to 0} \frac{\cancel{1}+x-(\cancel{1}-x)}{3x(\sqrt{1+x}+\sqrt{1-x})}$$

$$= \lim_{x\to 0} \frac{2\cancel{x}}{3\cancel{x}(\sqrt{1+x}+\sqrt{1-x})} = \frac{2}{6} = \boxed{\frac{1}{3}}$$