2. $L_4 = \lim_{x \to 0} \frac{\sqrt{5+x} - \sqrt{5}}{x} \cdot \frac{\sqrt{5+x} + \sqrt{5}}{\sqrt{5+x} + \sqrt{5}}$ ← correction

$$= \lim_{x \to 0} \frac{(\sqrt{5+x})^2 - (\sqrt{5})^2}{x(\sqrt{5+x} + \sqrt{5})}$$

$$= \lim_{x \to 0} \frac{(5+x) - 5}{x(\sqrt{5+x} + \sqrt{5})}$$

$$= \lim_{x \to 0} \frac{x}{x(\sqrt{5+x} + \sqrt{5})}$$

$$= \lim_{x \to 0} \frac{1}{\sqrt{5+x} + \sqrt{5}}$$

$$= \frac{1}{\sqrt{5} + \sqrt{5}} = \frac{1}{2\sqrt{5}}$$