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Compute

$$(a) \lim_{x \rightarrow 0} \frac{1 - \sqrt{x+1}}{2 - \sqrt{x+4}}$$

$$(b) \lim_{x \rightarrow \infty} \frac{x^2 + x + 1}{x - e^x}$$

$$(a) \lim_{x \rightarrow 0} \frac{1 - \sqrt{x+1}}{2 - \sqrt{x+4}} \stackrel{\text{L'H } \frac{0}{0}}{=} \lim_{x \rightarrow 0} \frac{-\frac{1}{2\sqrt{x+1}}}{-\frac{1}{2\sqrt{x+4}}}$$

$$= \lim_{x \rightarrow 0} \frac{\sqrt{x+4}}{\sqrt{x+1}} = \frac{\sqrt{4}}{\sqrt{1}} = \boxed{2}$$

$$(b) \lim_{x \rightarrow \infty} \frac{x^2 + x + 1}{x - e^x} \stackrel{\text{L'H } \frac{\infty}{\infty}}{=} \lim_{x \rightarrow \infty} \frac{2x + 1}{1 - e^x}$$

$$\stackrel{\text{L'H } \frac{\infty}{\infty}}{=} \lim_{x \rightarrow \infty} \frac{2}{-e^x} = \frac{2}{-\infty} = \boxed{0}$$