

$$\begin{aligned}
 d) \quad & \lim_{x \rightarrow -1} \frac{x^2 - x - 2}{(x+1)^2} = \frac{"0"}{0} \\
 & = \lim_{x \rightarrow -1} \frac{(x+1) \cdot (x-2)}{(x+1)^2} \\
 & = \lim_{x \rightarrow -1} \frac{x-2}{x+1} = \frac{"-3"}{0^+} = +\infty
 \end{aligned}$$

$x$	$-1$
$x+1$	$-0^+$

$$\begin{aligned}
 e) \quad & \lim_{x \rightarrow +\infty} \frac{\sqrt{9x^2+1}}{3-2x} = \frac{+\infty}{-\infty} \\
 & = \lim_{x \rightarrow +\infty} \frac{\frac{\sqrt{9x^2+1}}{x}}{\frac{3-2x}{x}} = \lim_{x \rightarrow +\infty} \frac{\pm \sqrt{\frac{9x^2+1}{x^2}}}{\frac{3-2x}{x}} \\
 & = \lim_{x \rightarrow +\infty} \frac{\pm \sqrt{9 + \frac{1}{x^2}}}{\frac{3}{x} - 2} = \frac{\pm 3}{-2} = \mp \frac{3}{2} \quad \text{---} \rightarrow 0
 \end{aligned}$$

$$\begin{aligned}
 f) \quad & \lim_{x \rightarrow -\infty} (\sqrt{4x^2+5x} + 2x) = +\infty - \infty \\
 & = \lim_{x \rightarrow -\infty} \frac{(\sqrt{4x^2+5x} + 2x) \cdot (\sqrt{4x^2+5x} - 2x)}{\sqrt{4x^2+5x} - 2x} \\
 & = \lim_{x \rightarrow -\infty} \frac{4x^2 + 5x - 4x^2}{\sqrt{4x^2+5x} - 2x} = \frac{-\infty}{+\infty} \\
 & = \lim_{x \rightarrow -\infty} \frac{\frac{5x}{x}}{-\sqrt{\frac{4x^2+5x}{x^2}} - \frac{2x}{x}} \\
 & = \lim_{x \rightarrow -\infty} \frac{5}{-\sqrt{4 + \frac{5}{x}} - 2} = \frac{5}{-2-2} = -\frac{5}{4}
 \end{aligned}$$

Remarque:  $\lim_{x \rightarrow +\infty} (\sqrt{4x^2+5x} + 2x) = +\infty + \infty = +\infty$ .