

$$\begin{aligned}
 8. \quad & \lim_{x \rightarrow \infty} \frac{2x - 1}{\sqrt{3x^2 + x + 1}} \\
 &= \lim_{x \rightarrow \infty} \frac{x \left(2 - \frac{1}{x}\right)}{|x| \sqrt{3 + \frac{1}{x} + \frac{1}{x^2}}} \quad (\text{but } |x| = x \text{ as } x \rightarrow \infty) \\
 &= \lim_{x \rightarrow \infty} \frac{2 - \frac{1}{x}}{\sqrt{3 + \frac{1}{x} + \frac{1}{x^2}}} = \frac{2}{\sqrt{3}}
 \end{aligned}$$