

A. In this part of the Q you may assume any results that are proved in unit F1 but you should refer to any result that you use.

Prove each of the following statements.

$$1. \lim_{x \rightarrow 1} \frac{3x^3 + x - 4}{4x^2 - 3x - 1} = 2$$

$$2. \lim_{x \rightarrow 0} \frac{x^4}{\sin x^4} = 1$$

$$3. \lim_{x \rightarrow \infty} \frac{x^4 - 4 \log x}{6e^x - x} = 0$$