Very short answer questions

1. 2 marks Each part is worth 1 mark. Please write your answers in the boxes.

(a) Find the domain of continuity for the function \( f(x) = \log(4x^2 - 1) \).

Answer:

(b) Compute \( \lim_{t \to 1} \sqrt{5x^3 + 4} \).

Answer:

Short answer questions — you must show your work

2. 4 marks Each part is worth 2 marks.

(a) Compute the limit \( \lim_{x \to -3} \frac{x^2 - 9}{x + 3} \).

(b) Find all values of \( c \) such that the following function is continuous:

\[
f(x) = \begin{cases} 
  x^2 + c & \text{if } x < c \\
  2cx - 2 & \text{if } x \geq c
\end{cases}
\]
3. [4 marks] Compute the limit \( \lim_{x \to 1} \frac{\sqrt{x + 2} - \sqrt{4 - x}}{x - 1} \).