

Show all work and circle/box your final answer. All answers must be simplified unless stated otherwise.

1. (5 points) Find the following limits:

(a) $\lim_{x \rightarrow \infty} \frac{x^4 + 8x^2 + 9}{x^6 + 6x^2}$

(b) Suppose $3x \leq f(x) \leq x^3 + 2$. Find $\lim_{x \rightarrow 1} f(x)$ using the squeeze theorem.

2. (5 points) Where is the following function continuous? $f(x) = \begin{cases} 8x - 3 & x \leq 1 \\ 4x^2 + 5 & x > 1 \end{cases}$