Math 201 - Quiz #6   Name: _____

1. **Solve as few or as many as you think you need to maximize your score. Please put an X through the parts you do not want graded.**

   (a) Find interval(s) where f is **increasing**, interval(s) where f is **decreasing**, and find any local maximum and local minimum **value(s)** of f if:

   $$f(x) = \frac{x^2}{x^2 + 3}.$$

   (b) Find interval(s) where f is **concave up**, interval(s) where f is **concave down**, and find any inflection **points**:

   $$f(x) = \frac{x^2}{x^2 + 3}.$$

(c) $\displaystyle\lim_{x\to 0} \frac{\sin(3x)+\sin(4x)}{\tan(5x)}$

answer:

(d) $\displaystyle\lim_{x\to\infty} \frac{(\ln(x))^2}{x}$

answer:

(e) $\displaystyle\lim_{x\to\infty} x^{1/x}$

answer: