Name: _____   Section: _____

Instructions: Show all your work in order to receive proper credit. No formula sheets and no notes are allowed during the quiz. No cell phones, calculators, or any other electronic devices are allowed in a student's possession during any quiz. All such devices must be put away in the student's bag, out of reach of the student during the quiz. Quiz should be completed in one seating with no breaks. Your work must be written clearly using proper notation. Answers must be justified using techniques that have been taught in this course. Good luck! **Timing:** 15 minutes

1. **(6 pts)** You must use calculus methods to solve the problem, and you must justify that your answer really does give the smallest sum.
   The product of two positive numbers is 36. Find the smallest value of their sum.

2. Evaluate the limit or determine that it does not exist. If the limit is infinite, then your answer should be ∞ or $-\infty$ (as appropriate), instead of does not exist. If you use the L'Hôpital's Rule, justify the use of it. Each part is 2 points.

(Part a) $\lim\limits_{x \to 0} \left(\dfrac{x \cdot tanx}{sin3x} \right)$

(Part b) $\lim\limits_{x \to \infty} \left(\dfrac{3 + lnx}{x^2 + 7} \right)$