Name_____ No calculators. Present neatly. Score_____.

1)

The hypotenuse of a right triangle is growing at a constant rate of a centimeters per second and one leg is decreasing at a constant rate of b centimeters per second. How fast is the acute angle between the hypotenuse and the other leg changing at the instant when both legs are 1 cm?

2) Find the limit or explain why it does not exist.

$$\lim_{x \to 1} \sqrt{\frac{\ln x}{x^4 - 1}}$$

Your work:

Name_____ No calculators. Present neatly. Score_____.

1)

A particle is moving along the curve $y = x \ln x$. Find all values of x at which the rate of change of y with respect to time is three times that of x. [Assume that dx/dt is never zero.]

2) Find the limit or explain why it does not exist.

$$\lim_{x \to 0} \frac{a^x - 1}{x}, \quad a > 0$$

<u>Your work:</u>