Name_____ Quiz 3 Calculus 1 Dr. Taleb Alkurdi

ID:---------- Show your work: 2 points for the details in each question and 0.5 point for the final answer

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

1) A piece of land is shaped like a right triangle. Two people start at the right angle of the triangle at the same time, and walk at the same speed along different legs of the triangle. If the area formed by the positions of the two people and their starting point (the right angle) is changing at 4 m^2/s, then how fast are the people moving when they are 3 m from the right angle? (Round your answer to two decimal places.) 1) _____

A) 0.67 m/s B) 2.67 m/s C) 1.33 m/s D) 2.26 m/s

Use the linear approximation $(1 + x)^k \approx 1 + kx$, as specified.

2) Estimate $(1.0006)^{50}$. 2) _____

A) 1.006 B) 1.06 C) 1.03 D) 1.012

Use logarithmic differentiation to find the derivative of y with respect to the independent variable.

3) $y = x^{7 \sin x}$ 3) _____

A) $x^{\sin x}\left(\cos x \ln x + \frac{\sin x}{x}\right)$ B) $7x^{7 \sin x}\left(\cos x \ln x + \frac{\sin x}{x}\right)$

C) $7 \sin x \ln x$ D) $7 \cos x \ln x + \frac{\sin x}{x}$

Solve the problem.

4) The diameter of a tree was 8 in. During the following year, the circumference increased 2 in. About how much did the tree's diameter increase? (Leave your answer in terms of π.) 4) _____

A) $\frac{2}{\pi}$ in. B) $\frac{\pi}{2}$ in. C) $\frac{10}{\pi}$ in. D) $\frac{8}{\pi}$ in.

Answer Key
Testname: QUIZ3_CAL1_161

1) C
2) C
3) B
4) A