Calculus I, Fall 2011

Quiz 4

Nov 23, 2011

Show all details.

1. $f(x) = \exp(\frac{-1}{x^2})$, $x \neq 0$ and $f(0) = 0$. Is f continuous at 0? Is f differentiable at 0?
2. Find the derivative for the following functions. Need not simplify.
$$\text{(a)} \quad y = 2^{(x^2)}, \qquad \text{(b)} \quad y = \frac{(x+1)^{10}(x+2)^8}{(2x+1)^4}$$
3. Let $f(x)$ be a differentiable and strictly increasing function with $f(1) = 2$, $f(2) = 3$, $f(3) = 5$, $f'(1) = 1.1$, $f'(2) = 1.2$, $f'(3) = 1.3$. Find the derivative of $f^{-1}(y)$ at $y = 2$.
4. Evaluate
$$\text{(a)} \quad \int \cot x \, dx, \qquad \text{(b)} \quad \int_{-1}^{1} x^2 \sqrt{x^3+1} \, dx$$
5. True or False?
$$\ln(x) = o(x^{0.1}) \text{ as } x \to \infty$$
Give reason for your answer.

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