

Quiz 2

Mar 21, 2013

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1. For what values of x does the series $\sum_{n=2}^{\infty} \frac{x^n}{n \ln n}$ converge? Explain.
2. Suppose that f is infinitely many times differentiable on R . State Taylor's Theorem for f and derive the formula for $R_2(x)$ (in any form you choose).
3. Find the Taylor series generated by $\sin x$ at $x = 0$. For what values of x does $\sin x$ equal this series? Explain.

4. Find the sum of the series

$$\frac{1}{2} - \frac{1}{8} + \frac{1}{24} - \cdots + (-1)^{n-1} \frac{1}{n2^n} + \cdots$$

5. Let $f(x) = \exp\left(\frac{-1}{x^4}\right)$ for $x \neq 0$ and $f(0) = 0$. Is f differentiable everywhere? Explain.

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