Sriram Pendyala

Science Bowl

Math Questions: Set #1: 10 Questions Short Answer

1. Math: Short Answer: Given that , find f’(x) and f’’(x).

ANSWER: ,

1. Math: Short Answer: Given that f(x) is continuous and twice differentiable on the closed interval I, and given that f(x) has at least 4 relative extrema on I, how many roots are guaranteed on I for the second derivative of f(x)?

ANSWER: 3

1. Math: Short Answer: Find the partial derivative for the function f(x,y,z) = (xy)(z).

ANSWER:

1. Math: Short Answer: Using the Maclaurin Polynomial P4 for sin(x), approximate sin(1), giving your answer in fractional form.

ANSWER: 5/6

1. Math: Short Answer: Find the antiderivative of the function

ANSWER:

1. Math: Short Answer: Given that , find F’(x).

ANSWER:

1. Math: Short Answer: If using trigonometric substitution to find the integral , what trigonometric substitution would help in the solution of the integral?

ANSWER: x=5sin(θ)

1. Math: Short Answer: Find the antiderivative .

ANSWER: arctan(x) + C

1. Math: Short Answer: The p-series, which is diverges if p is less than or equal to what number?

ANSWER: 1

1. Math: Short Answer: Differentiate .

ANSWER: