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2/16/18

Explanation for the Monte Carlo Method of approximation:

The reason that estimates are so poor at small levels of N (the number of random points you are generating) is because there is a small sample pool. The smaller the sample pool to chose your points, the less accurate the result.

Derivative Calculator Answers

I did not get the pretty answer code to work, but I did the recommended modifications to all the "make-operations" in the source. My answers are ugly, but they work.

Question 4:

a) (- (+ (* 5 1) (* 0 x)) 0)
    a. 5
b) (* (* 5 (** (ln (+ (** x 2) 1)) 4)) (/ (+ (* (* 2 (** x 1)) 1) 0) (+ (** x 2) 1)))
    a. $5[\ln(x^2+1)]^4 \cdot \left(\frac{2x}{x^2+1}\right)$