MATH 1A − QUIZ 10

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Name:_____

Instructions: You have 12 minutes to take this quiz, for a total of 10 points. **Show your work!** May your luck be integrable!

(1) *(4 points)* Using **the definition of the integral**, evaluate:

$$\int_2^5 (2-x)^3\,dx$$

Note: The following limits are useful:

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}, \qquad \sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}, \qquad \sum_{i=1}^{n} i^3 = \frac{n^2(n+1)^2}{4}$$

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(2) *(4 points)* Calculate the following limit:

$$\lim_{n\to\infty} \frac{n}{n^2+1} + \frac{n}{n^2+4} + \frac{n}{n^2+9} + \cdots + \frac{n}{n^2+n^2}$$

(3) *(2 points)* Find the derivative of the following function:

$$f(x) = \int_{\sin(x)}^{1+e^x} e^{-t^2}\,dt$$