PRINT NAME: SOLUTIONS

Honors Calculus II [2423-001] Quiz I

Q1]...[5 points] Write the following limit of Riemann sums as a definite integral. You do not need to solve the integral.

$$\lim_{n\to\infty}\sum_{i=1}^{n}\left(1+\frac{2i}{n}\right)^2\frac{2}{n}$$

- You could say (taking $1/n$ as widths and i/n as evaluation points)

$$\int_0^1 2(1+2x)^2\,dx$$

- You could also say (taking $2/n$ as widths and $2i/n$ as evaluation points)

$$\int_0^2 (1+x)^2\,dx$$

- You could also say (taking $1/n$ as widths and $1+2i/n$ as evaluation points)

$$\int_1^3 x^2\,dx$$

Q2]...[5 points] Find $f'(x)$ where

$$f(x) \;=\; \frac{d}{dx}\left(\int_{x^2}^{7}\sin(t^2)dt\right)$$

The Fundamental theorem together with the clain rule tells us that

$$f(x) \;=\; -2x\sin(x^4)$$

Thus we take another derivative to get

$$f'(x) \;=\; -2\sin(x^4)-2x\cos(x^4)4x^3 \;=\; -2\sin(x^4)-8x^4\cos(x^4)$$