Name and surname:

U number:

Calculus I - MAC 2311 - Section 001
The last quiz
04/25/2018

Instructions: The total number of points of this quiz is 10. You will get an extra point if you solve correctly the last exercise.

1) [2 points] State the Fundamental Theorem of Calculus (Part 1 and Part 2).

2) a) [1.5 points] Compute the following indefinite integral:
$$\int \frac{5x^6 + 2x^3 - 3x^2}{x^2} + \cos(x)\, dx.$$

b) [1.5 points] Use your previous work for computing
$$\int_1^\pi \frac{5x^6 + 2x^3 - 3x^2}{x^2} + \cos(x)\, dx.$$

3) [3 points] Let $g(x) = \int_0^{x^3} e^t \sin(t^2)\, dt$. Compute $g'(x)$.

3) [2 points] Express the following limit of Riemann sums as a definite integral over the interval $[-2, 1]$:

$$\lim_{n \to \infty} \sum_{i=1}^{n} \frac{\sin^2(x_i^*) + (x_i^*)^2}{\sqrt{x_i^* + 3}} \Delta x.$$

3) [Bonus] Using Part 2, prove Part 1 of the Fundamental Theorem of Calculus.