Name and surname:

U number:

Calculus I - MAC 2311 - Section 001
Quiz 4
02/14/2018

Instructions: The total number of points of this quiz is 12, but your grade will be the minimum between your score and 10. You will get an extra point if you solve correctly the last exercise.

1) [10 points] For each of the following functions compute its derivative:

a) $f(x) = x^7 - 3x^2 - \dfrac{2}{x} + \sqrt[6]{x^5}$

b) $f(x) = x^3 \tan(x)$

c) $f(x) = \cos\left(x^2 + 4\sin(x)\right)$

d) $f(x) = \dfrac{3 + \sin(2x)}{x^2 + 4}$

e) $f(x) = \sqrt{\cos\left(\dfrac{1}{x}\right)}$

2) [2 points] State the Intermediate Value Theorem.

3) [Bonus] Use the definition of $\cot(x)$ and the appropriate rule to show that the derivative of $\cot(x)$ is $-\csc^2(x)$ $\left(\text{or equivalently } -\dfrac{1}{\sin^2(x)}\right)$.