

MTH 162 Sec H8, Spring 2014: Sample Midterm 1

Student Name \_\_\_\_\_

Student ID \_\_\_\_\_

UNIVERSITY OF MIAMI HONOR CODE PLEDGE

I have neither given nor received unauthorized aid on this piece of work, and I understand and will uphold the ideals of academic honesty as stated in the Honor Code of the University of Miami.

Signature \_\_\_\_\_

Total: 30 pts (=15% of the final grade )

Time allowed: 50 minutes.

You are not allowed to use any electronic devices, such as calculators, laptops or phones, during the test. Please show your steps clearly.

1. (10 pts) Let  $f(x) = \sqrt{x-2}$ , defined on  $[2, \infty)$ .

(a) (3 pts) Find the inverse of  $f$ .

(b) (3 pts) Find  $f^{-1}(2)$ .

(c) (4 pts) Compute  $(f^{-1})'(2)$ .



2. (10 pts)

(a) (2 pts) Compute  $\int \frac{1}{x} dx$  and  $\int 7^x dx$ .

(b) (4 pts) Expand the quantity  $\ln \sqrt{\frac{x+1}{(x-1)^3}}$ .

(c) (4 pts) Use logarithmic differentiation to find the derivative of  $\sqrt{\frac{x+1}{(x-1)^3}}$ . (Your answer must be exact and fully simplified.)



3. (10 pts)

(a) (3 pts) Differentiate the function  $f(x) = e^{x^2+1}$ .

(b) (3 pts) Compute  $\int \frac{e^{\frac{1}{x}}}{x^2} dx$ .

(c) (4 pts) Compute  $\frac{d}{dx} (x^{\sin x})$ .

