

**Math 10A with Professor Stankova**

**Quiz 6; Wednesday, 10/4/2017**

**Section #106; Time: 10 AM**

**GSI name: Roy Zhao**

**Name: \_\_\_\_\_**

---

Circle True or False or leave blank. (1 point for correct answer,  $-1$  for incorrect answer, 0 if left blank)

1. True    False    Every function has a unique antiderivative.
2. True    False    The derivative of an anti-derivative of a function, is the function itself.

Show your work and justify your answers. Please circle or box your final answer.

3. (10 points) You are drinking from a glass of water through a straw. After  $t$  seconds, the height of the water is decreasing at a rate of  $2e^{-t}cm/s$ .
  - (a) (4 points) Let  $h(t)$  denote the height of the water after  $t$  seconds. Write a differential equation for  $h$  (write  $\frac{dh}{dt} = \text{something}$ ).

(b) (4 points) Initially, the  $2cm$  tall glass is full. Find the equation for  $h(t)$ .

(c) (2 points) How high is the water level after 2 seconds?