Name: _____ PID: _____

TA: _____ Sec. No: _____ Sec. Time: _____

Math 10B.
Midterm Exam 2
February 25, 2010.

Turn off and put away your cell phone.
You may use any type of calculator, but no other electronic devices during this exam.
You may use one page of notes, but no books or other assistance during this exam.
Read each question carefully, and answer each question completely.
Show all of your work; no credit will be given for unsupported answers.
*Write your solutions clearly and legibly; no credit will be given for illegible solutions.*
If any question is not clear, ask for clarification.

#	Points	Score
1	6	
2	6	
3	8	
4	6	
Σ	26	

1. (6 points) The graph of a function f is given below. Put the following approximations to the integral $\int_a^b f(x)\,dx$ and its exact value in order from smallest to largest:

$$LEFT(5), LEFT(10), RIGHT(10), MID(10), TRAP(10), \int_a^b f(x)\,dx \text{ (exact value)}$$

Explain how you arrived at your answer.
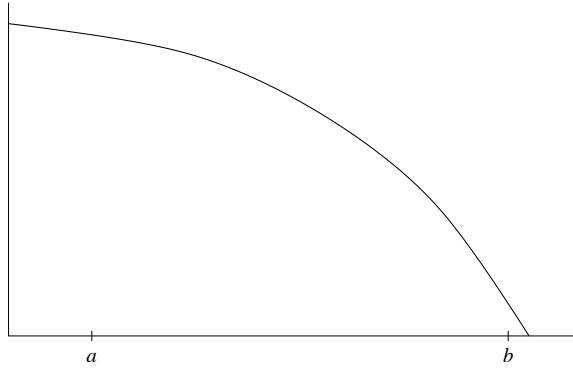
2. An ice-cream cone has the shape of a right circular cone. The opening forms a circle of radius 2 cm. The height of the cone is 6 cm. The cone is sliced into thin discs, each parallel to the cone's opening.

   (a) (4 points) Express the volume of the cone as an integral of the cross-sectional area. Be sure to describe how you derived your integral.

   (b) (2 points) Evaluate the integral to determine the volume of the cone.

3. (8 points) Evaluate the following integrals.

(a) $\int \dfrac{3x - 1}{(x-2)(x+3)} \, dx$

(b) $\int \tan^{-1}(2t) \, dt$

4. (6 points) Let $f(x) = \dfrac{1}{\sqrt{x-2}}$. Is the area under the graph $y = f(x)$ and between $x = 2$ and $x = 6$ finite? If so, compute its value; if not, explain why it is not.

$y = f(x)$