

Name: _____ PID: _____

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

Math 10B.
Midterm Exam 1
January 28, 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	8	
3	6	
4	6	
Σ	26	

1. (a) (3 points) Evaluate the following definite integral.

$$\int_1^2 \left(\frac{2y-1}{y} \right)^2 dy$$

- (b) (3 points) Find the general solution of the following differential equation.

$$\frac{dy}{dt} = t^2\sqrt{t} + \frac{2}{t}$$

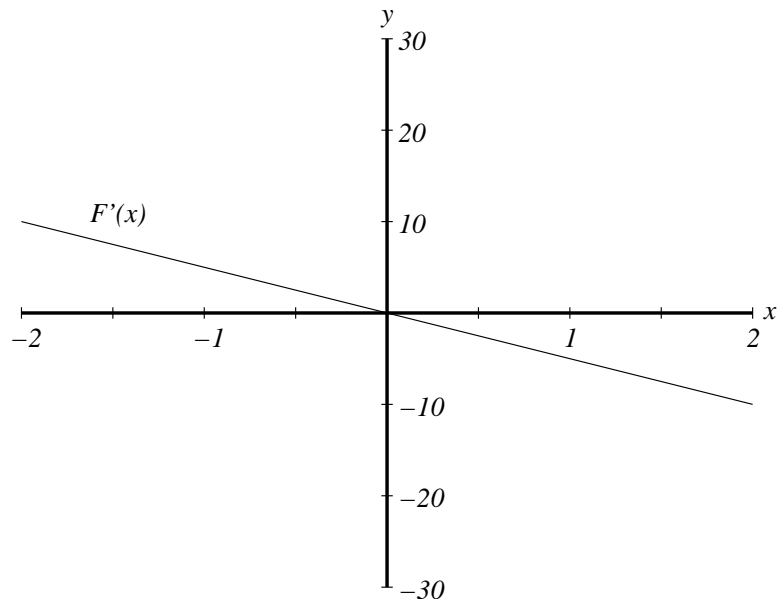
2. (8 points) A cyclist notices an obstacle on the road and applies the brakes. The velocity (in m/s) of the cyclist is recorded every 2 seconds.

seconds after applying brakes	0	2	4	6
velocity	20	10	5	0

- (a) Compute lower and upper estimates for the distance traveled after the brakes are applied.

- (b) If the distance between the cyclist and the obstacle was 75 m when the brakes were applied, will the cyclist hit the obstacle? Explain your reasoning.

3. (6 points) A function $F(x)$ satisfies $F(0) = 100$. The graph of $F'(x)$ is given below. Find the value of $F(-2)$ and explain how you arrived at your answer.



4. (6 points) If $f(x)$ is an **even** function and $\int_{-2}^2 [f(x) - 3] dx = 8$, find $\int_0^2 f(x) dx$.