

Name: _____

Instructor: _____

Math 10560, Practice Exam 2.
March 6, 2007

- The Honor Code is in effect for this examination. All work is to be your own.
- No calculators.
- The exam lasts for 1 hour and 15 min.
- Be sure that your name is on every page in case pages become detached.
- Be sure that you have all 9 pages of the test.

PLEASE MARK YOUR ANSWERS WITH AN X, not a circle!					
1.	(a)	(b)	(c)	(d)	(e)
2.	(a)	(b)	(c)	(d)	(e)
.....					
3.	(a)	(b)	(c)	(d)	(e)
4.	(a)	(b)	(c)	(d)	(e)
.....					
5.	(a)	(b)	(c)	(d)	(e)
6.	(a)	(b)	(c)	(d)	(e)
.....					
7.	(a)	(b)	(c)	(d)	(e)
8.	(a)	(b)	(c)	(d)	(e)

Please do NOT write in this box.	
Multiple Choice	_____
9.	_____
10.	_____
11.	_____
12.	_____
Total	_____

Name: _____

Instructor: _____

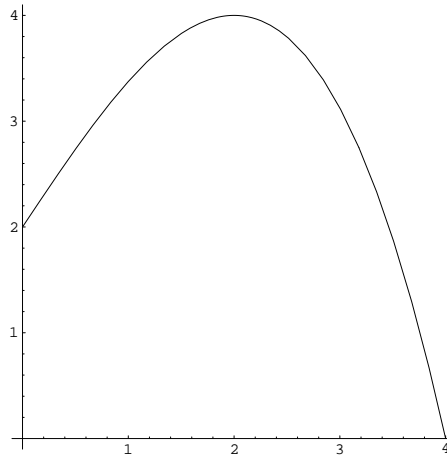
Multiple Choice

1.(7 pts.) Which of the following expressions gives the partial fraction decomposition of the function

$$f(x) = \frac{x^2 - 2x + 6}{x^3(x - 3)(x^2 + 4)}?$$

- (a) $\frac{A}{x^3} + \frac{B}{x - 3} + \frac{Cx + D}{x^2 + 4}$
- (b) $\frac{A}{x^3} + \frac{B}{x^2} + \frac{C}{x} + \frac{D}{x - 3} + \frac{E}{x^2 + 4}$
- (c) $\frac{A}{x^3} + \frac{B}{x^2} + \frac{C}{x} + \frac{D}{x - 3} + \frac{Ex + F}{x^2 + 4}$
- (d) $\frac{A}{x^3} + \frac{B}{x - 3} + \frac{C}{x^2 + 4}$
- (e) $\frac{A}{x^3} + \frac{B}{x^2} + \frac{C}{x} + \frac{D}{x - 3} + \frac{E}{x + 2} + \frac{F}{x - 2}$

2.(7 pts.) Use the trapezoidal rule with step size $\Delta x = 2$ to approximate the integral $\int_0^4 f(x)dx$ where the graph of the function $f(x)$ is given below.



- (a) 8 (b) 6 (c) 12 (d) 10 (e) 14

Name: _____

Instructor: _____

3.(7 pts.) Evaluate the following improper integral:

$$\int_e^{\infty} \frac{1}{x(\ln x)^2} dx$$

- (a) $\frac{1}{e}$ (b) -1 (c) 1 (d) divergent (e) 0

4.(7 pts.) Find $\int_{-2}^2 \frac{1}{x+1} dx$.

- (a) $\frac{1}{2} \ln 3$ (b) $\ln 3$ (c) $\frac{8}{9}$ (d) 0 (e) diverges

Name: _____

Instructor: _____

5.(7 pts.) Which of the following is an expression for the area of the surface formed by rotating the curve $y = 5^x$ between $x = 0$ and $x = 2$ about the y -axis?

(a) $\int_1^{25} 2\pi y \sqrt{1 + \frac{1}{y^2 \ln(25)}} dy$

(b) $\int_0^2 2\pi x \sqrt{1 + (\ln 5)^2 \cdot 25^x} dx$

(c) $\int_1^{25} 2\pi y \sqrt{1 + \frac{1}{y^2 (\ln 5)^2}} dy$

(d) $\int_0^2 2\pi x \sqrt{1 + 5^{2x}} dx$

(e) $\int_0^2 2\pi 5^x \sqrt{1 + (\ln 5)^2 \cdot 5^{2x}} dx$

6.(7 pts.) Find the centroid of the region bounded by $y = 1/x$, $y = 0$, $x = 1$, and $x = 2$.

(a) $(\ln \frac{1}{2}, 4 \ln \frac{1}{2})$

(b) $(\frac{1}{\ln 2}, \frac{1}{2})$

(c) $(\frac{3}{\ln 2}, \frac{1}{4 \ln 2})$

(d) $(3 \ln \frac{1}{2}, 4 \ln \frac{1}{2})$

(e) $(\frac{1}{\ln 2}, \frac{1}{4 \ln 2})$

Name: _____

Instructor: _____

7.(7 pts.) Use Euler's method with step size 0.5 to estimate $y(1)$ where $y(x)$ is the solution to the initial value problem

$$y' = y + 2xy, \quad y(0) = 1.$$

- (a) $\frac{1}{2}$ (b) 3 (c) 2 (d) $\frac{3}{2}$ (e) $\frac{5}{2}$

8.(7 pts.) The solution to the initial value problem

$$y' = \frac{\sin x}{2y + 1} \quad y(0) = 2$$

is given by

- (a) $y^2 + y = 7 - \cos x$
(b) $y^2 + y = 2 - \cos x$
(c) $2y + 1 = 5e^{-\cos x}$
(d) $2y + 1 = 6 - e^{-\cos x}$
(e) $y^2 + y = 5 + \cos x$

Name: _____

Instructor: _____

Partial Credit

You must show your work on the partial credit problems to receive credit!

9.(11 pts.) Find the integral

$$\int \frac{3x + 1}{x^3 + x^2} dx.$$

Name: _____

Instructor: _____

10.(11 pts.) Calculate the integral

$$\int \frac{dx}{x + \sqrt[3]{x}}.$$

Name: _____

Instructor: _____

11.(11 pts.) Calculate the arc length of the curve if $y = \frac{x^2}{4} - \ln(\sqrt{x})$, where $2 \leq x \leq 4$.

Name: _____

Instructor: _____

12.(11 pts.) Solve the initial value problem

$$xy' + xy + y = e^{-x}$$

$$y(1) = \frac{2}{e}.$$

Name: _____

Instructor: ANSWERS

Math 10560, Practice Exam 2.

March 6, 2007

- The Honor Code is in effect for this examination. All work is to be your own.
- No calculators.
- The exam lasts for 1 hour and 15 min.
- Be sure that your name is on every page in case pages become detached.
- Be sure that you have all 9 pages of the test.

PLEASE MARK YOUR ANSWERS WITH AN X, not a circle!					
1.	(a)	(b)	(●)	(d)	(e)
2.	(a)	(b)	(c)	(●)	(e)
.....					
3.	(a)	(b)	(●)	(d)	(e)
4.	(a)	(b)	(c)	(d)	(●)
.....					
5.	(a)	(●)	(c)	(d)	(e)
6.	(a)	(b)	(c)	(d)	(●)
.....					
7.	(a)	(●)	(c)	(d)	(e)
8.	(●)	(b)	(c)	(d)	(e)

Please do NOT write in this box.	
Multiple Choice	_____
9.	_____
10.	_____
11.	_____
12.	_____
Total	_____