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			Exam II per 26, 1999		
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Name: \_\_\_\_\_

Instructor: Dwyer

# **Multiple Choice**

**1.**(5 pts.) If  $x + \sin y = xy$  then at the point x = 0 and y = 0, the value of  $\frac{dy}{dx}$  is

- (a) 0
- (b) 1
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**2.**(5 pts.) Suppose the derivative of a function y = f(x) is  $y' = x^2(x+2)(x-2)$ . Then,

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Name:	

**3.**(5 pts.) A thin circular plate is heated in the oven. Its radius is increasing at a rate of 1 inch per hour. At what rate is the area of the plate increasing when the radius is 10 inches?

Instructor: Dwyer

- (a)  $20\pi$
- (b)  $10\pi$
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**4.**(5 pts.) Let  $f(x) = x^2 - 9$  for  $0 \le x \le 5$ . Then the absolute maximium occurs at x = 1

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Instructor: \_\_\_\_ Dwyer

Dwyer

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Instructor:	Dwyer
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Instructor: Cholak	Name:	
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Name:		
Instructor:	Cao	
Exam II etober 26, 1999		

- Oc
- The Honor Code is in effect for this examination. All work is to be your own. • No calculators.
- The exam lasts for one hour.
- Be sure that your name is on every page in case pages become detached.
- Be sure that you have all 11 pages of the test.

### Good Luck!

PLE	EASE MA	ARK YOUR A	NSWERS V	WITH AN X	, not a circle!
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4.	(a)	(b)	(c)	(d)	(e)
5.	(a)	(b)	(c)	(d)	(e)
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Name: \_\_\_\_\_

Instructor: Cao

### Multiple Choice

**1.**(5 pts.) If  $x + \sin y = xy$  then at the point x = 0 and y = 0, the value of  $\frac{dy}{dx}$  is

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- (c) -1
- (d) 2
- (e)  $\frac{1}{2}$

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Name:	
Instructor:	Cao

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**3.**(5 pts.) A thin circular plate is heated in the oven. Its radius is increasing at a rate of 1 inch per hour. At what rate is the area of the plate increasing when the radius is 10 inches?

- (a)  $20\pi$
- (b)  $10\pi$
- (c)  $2\pi$
- (d) π
- (e)  $100\pi$

**4.**(5 pts.) Let  $f(x) = x^2 - 9$  for  $0 \le x \le 5$ . Then the absolute maximium occurs at x = 1

(a) -3

(b) 0

(c) 3

(d) 5

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Name:

Instructor: Cao

**5.**(5 pts.) The asymptotes of the function

$$f(x) = \frac{x^2 - x - 2}{x^2 + 3x + 2} = \frac{(x+1)(x-2)}{(x+1)(x+2)}$$

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- (d) x = 1 and x = 2
- (e) x = -1, x = -2, and y = 1

**6.**(5 pts.) Find dy for  $y = \cos(4 - x^2)$ 

(a) dy = y'

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Name:

Instructor: Cao

**7.**(5 pts.) The first iteration of Newton's method for solving  $x^3 + x^2 + 1 = 0$  starting at  $x_0 = -2$  gives

(a) 
$$x_1 = \frac{3}{8}$$

(b) 
$$x_1 = -\frac{3}{8}$$

(c) 
$$x_1 = -\frac{19}{8}$$

(d) 
$$x_1 = -\frac{15}{8}$$

(e) 
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Name:	
Instructor:	Cao

Partial Credit 8.(11 pts.) Let  $y = f(x) = 5x^{2/5} - 2x$  with  $y' = 2(x^{-3/5} - 1)$  and  $y'' = -\frac{6}{5}x^{-8/5}$ .

Find all critical points

List the intervals where f is increasing / decreasing.

List the intervals where f is concave up / concave down

List all local maxima and local minima, or say so if there are none

List all inflection points, or say so if there are none

Name:	
Instructor: Cac	

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 for  $x\in(-\infty,-2)$  and  $x\in(2,\infty),$   $f'(x)>0$  for  $x\in(-2,2),$  
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Evaluate f at critical points and inflection points and graph the function.

Name:		_
Instructor:	Cao	

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 $\theta$ 

Name:			
Instructor:	Cao		

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$$-\sqrt{12}$$
  $\sqrt{12}$ 

Name:	
Instructor:	Cao

12.(11 pts.) About how accurately should you measure a variable t to insure that your calculation of the area of the rectangle with sides a=t, and b=2t is within 5% of its true value?

Name:			
Instruc	etor:C	Cao	

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

Instructor: Jarre

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Name:	

Instructor: \_\_\_\_Jarre

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Instructor:	Jarre

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