1:	5:	9:			
2:	6:	10:			
3:	7:				
4:	8:				

The equation of the tangent line to the curve with parametric equations  $x(t) = 2t + 1, y(t) = 3 - t^3$ at t=1 is:

# SHOW ANSWER

**A.** 
$$2x + 3y = 12$$

**B.** 
$$3x + 2y = 13$$

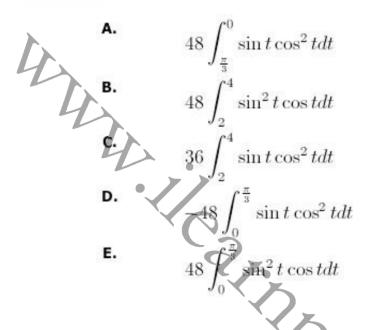
c. 
$$6x + y = 20$$

$$\mathbf{D.} \qquad 3x - 2y = 5$$

D. 
$$3x - 2y = 5$$
  
E. None of the above.

If  $x(t) = 4\cos t$ ,  $y(t) = 3\sin t$ , then  $\int_{2}^{4} xydx$  is equivalent to

## SHOW ANSWER



# Problem 3

The length of  $x = e^t \cos t$ ,  $y = e^t \sin t$  from t=2 to t=3 is

## SHOW ANSWER

A. 
$$\sqrt{2}e^2\sqrt{e^2-1}$$

B. 
$$\sqrt{2}(e^3 - e^2)$$

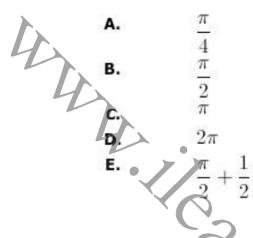
C. 
$$2(e^3 - e^2)$$

**D.** 
$$e^3(\cos 3 + \sin 3) - e^2(\cos 2 + \sin 2)$$

E. None of the above.

The area enclosed by the four-leaved rose  $r = \cos(2\theta)$  is

## SHOW ANSWER



## Problem 5

The rectangular equation of the parametric curve  $x = 1 - \sin t$  and  $y = 4 - 2\cos t$  is:

# SHOW ANSWER

**A.** 
$$4(x-1)^2 + (y-4)^2 = 1$$

**B.** 
$$4(x-1)^2 + (y-4)^2 = 4$$

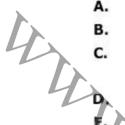
**C.** 
$$(x-1)^2 + (y-4)^2 = 4$$

**D.** 
$$(x-1)^2 + (y-4)^2 = 2$$

**E.** none of the above

The area bounded by the lemniscate with polar equation  $r^2 = 2\cos(2\theta)$  is equal to

## SHOW ANSWER



. .

None of the above

# Problem 7

The graph of the polar equation  $r = \frac{1}{\sin \theta - 2\cos \theta}$  is:

# SHOW ANSWER

- a circle
- B. a line with slope 1
- c. a line with slope 2

3.40°×

- D. a parabola
- E. a semi-circle

The power series  $x + \frac{x^2}{2} + \frac{x^3}{3} + \dots + \frac{x^n}{n} + \dots$ converges if and only if:

SHOW ANSWER

S. S. C.



$$-1 < x < 1$$

$$B. -1 \le x \le 1$$

B. 
$$-1 \le x \le 1$$
  
C.  $-1 \le x < 1$   
D.  $-1 < x \le 1$   
 $x = 0$ 

$$-1 < x \le x = 0$$

Problem 9

The power series

$$(x+1) - \frac{(x+1)^2}{2!} + \frac{(x+1)^3}{3!} - \frac{(x+1)^4}{4!} + \dots$$
diverges:

SHOW ANSWER

- for no real x values A.
- В.
- C.
- D.
- E.

Problem 10

The series 
$$\sum_{n=0}^{\infty} n!(x-3)^n$$
 converges if and only if

A.  $x=0$ 
B.  $2 < x < 4$ 
C.  $x=3$ 
 $2 \le x \le 4$ 
 $x < 2$  or  $x > 4$ 

### ANSWER KEY

1 (234)	В	5 (238)	В	9 (242)	A		
2 (235)	Е	6 (239)	D	10 (243)	С		
3 (236)	В	7 (240)	С				
4 (237)	В	8 (241)	С				

