

MATH 161 EXAM 3, Fall 2008

In problems 1-5, find the given integrals		Name:	Score	
1.	a) $\int_0^1 t e^{t^2} dt$	b) $\int \sqrt{x}(5-x^2) dx$	1	
			2	
			3	
			4	
			5	
			6	
			7	
			8	
Ans: _____.		Ans: _____.		
2.	a) $\int x^2 \sin(x^3 - 1) dx$	b) $\int 3 \sin 5t \cos 5t dt$	9	
			10	
			Tot	
Ans: _____.		Ans: _____.		
3.	a) $\int \frac{\sec^2(1/x)}{5x^2} dx$	b) $\int \frac{4t}{1+t^4} dt$	Ans: _____.	
			Ans: _____.	
4.	a) $\int x(x^2 - 4)^{5/2} dx$	b) $\int \frac{\sin x}{1 + \cos x} dx$	Ans: _____.	
			Ans: _____.	
5.	a) $\int_1^e \frac{\ln x}{4x} dx$	b) $\int \frac{x}{x+9} dx$	Ans: _____.	
			Ans: _____.	
Extra Space				

6. Use the Fundamental Theorem of Calculus to find:

a)  $\frac{d}{dx} \int_{\pi}^{x^4} \frac{\sin t}{t} dt$

Ans: \_\_\_\_\_.

b)  $\frac{d}{dx} \int_{4x}^1 \sqrt{t^4 - 9} dt$

Ans: \_\_\_\_\_.

7. Find the derivatives of the given functions:

a)  $f(x) = xe^{1/x}$ .

Ans: \_\_\_\_\_.

b)  $y = \ln(\ln x)$ .

Ans: \_\_\_\_\_.

8. Find  $dx/dy$  of the given inverse functions  $x = g(y)$  :

a)  $x = \sin^{-1}(\sqrt{y})$ .

Ans: \_\_\_\_\_.

b)  $y = x - \cos x$ .

Ans: \_\_\_\_\_.

9. Use logarithmic differentiation to find  $dy/dx$ .

a)  $y = x^{\sin x}$ .

Ans: \_\_\_\_\_.

b)  $y = 4^{3x}$ .

Ans: \_\_\_\_\_.

10. Find a function that satisfies the given differential equations:

a)  $\frac{dy}{dx} = \frac{x^2}{y^2}$ .

Ans: \_\_\_\_\_.

b)  $\frac{d^2y}{dt^2} = -9.8$ .

Ans: \_\_\_\_\_.

Extra Space