MATH 161 EXAM 4, Spring 2006

In problems 1-5, find the given integrals	Name:	Score	
1.	a) $\int_0^1 e^{3t}\,dt$	b) $\int_0^4 s\sqrt{s}\,ds$	1	
			2	
			3	
			4	
			5	
			6	
			7	
	Ans:_____.	Ans:_____.	8	
2.	a) $\int x\cos x^2\,dx$	b) $\int \sinh(7t)\,dt$	9	
			10	
			Tot	
	Ans:_____.	Ans:_____.		
3.	a) $\int \dfrac{e^y}{1+e^{2y}}\,dy$	b) $\int \dfrac{z^2}{2+z^3}\,dz$		
	Ans:_____.	Ans:_____.		
4.	a) $\int_0^1 x^2 e^{x^3}\,dx$	b) $\int \dfrac{1}{t(1+\ln^2 t)}\,dt$		
	Ans:_____.	Ans:_____.		
5.	a) $\int \dfrac{x-4}{x}\,dx$	b) $\int \dfrac{x}{4-x}\,dx$		
	Ans:_____.	Ans:_____.		
	Extra Space			

M161Ex4F05	Name:

6. Use the Fundamental Theorem of Calculus to find:

a) $\dfrac{d}{dx}\displaystyle\int_{\pi^2}^{x^2} \sin\sqrt{t}\,dt$

Ans:_____.

b) $\dfrac{d}{dx}\displaystyle\int_{x}^{5} \sqrt{t^3+4}\,dt$

Ans:_____.

7. Find the area bounded by $y = x^2 - 3x + 1$ and $y = x + 1$.

a) Set up the integral.

Ans:_____.

b) Compute the integral.

Ans:_____.

8. The region bounded by $y = e^{-x^2}$, $y = 0$ and $x = 0$ and $x = 1$ is rotated about the y-axis. Find the volume generated.

a) Set up the integral.

Ans:_____.

b) Compute the integral.

Ans:_____.

9. The region bounded by $y = 1/x$, $y = 0$, $x = 1$ and $x = 2$ is rotated about $y = -1$. Find the volume generated.

a) Set up the integral.

Ans:_____.

b) Compute the integral.

Ans:_____.

10 If 2 J of work are required to stretch a spring by 0.5 m from its natural length;

a) Find the spring constant.

Ans:_____.

b) How much work is need to stretch it another 0.2 m?

Ans:_____.

Extra Space