MATH 161 EXAM 4, FALL 2005

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

M161Ex4F05	Name:

6. Use the Fundamental Theorem of Calculus to find:

a) $\dfrac{d}{dx}\displaystyle\int_5^x \sqrt{1+4t^3}\,dt$

Ans:_____.

b) $\dfrac{d}{dx}\displaystyle\int_{2x}^{x^2} \sin(t^2)\,dt$

Ans:_____.

7. Find the area bounded by $x = y^2$ and $x = 2y$.

a) Set up the integral

Ans:_____.

b) Compute the integral

Ans:_____.

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

a) Set up the integral

Ans:_____.

b) Compute the integral

Ans:_____.

10 A force of 6 N is required to stretch a spring from 0.1 m to 0.3 m beyond its natural length.

a) Find the spring constant.

Ans:_____.

b) How much work was it required?

Ans:_____.

Extra Space