Math 1042 **Test 1 Review Even Answer Key** **Summer 2009**

Section 5.4

24. $A(2)=2\cdot 2=4$, the area under the curve of $f(x)$ from $x=0$ to $x=2$. $A(3)=2\cdot 3+\frac{1}{2}=\frac{13}{2}$, the area under the curve of $f(x)$ from $x=0$ to $x=3$. By the FTC, $A'(x)=f(x)$ so $A'(2)=f(2)=2$ and $A'(3)=f(3)=3$.

30. Let $F(x)=\int_1^x \sin t^2\,dt$. Then $\int_1^{1/x} \sin t^2\,dt = F(1/x)$ and so, by chain rule,

$$\frac{d}{dx}\int_1^{1/x} \sin t^2\,dt = \frac{d}{dx}F(1/x) = \sin\left(\left(\frac{1}{x}\right)^2\right)\cdot\left(-\frac{1}{x^2}\right) = -\frac{\sin\left(1/x^2\right)}{x^2}$$

Section 5.6

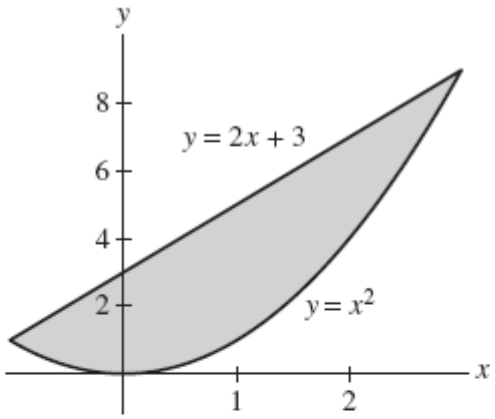
16. $\frac{1}{40}(4x-1)^{5/2}+\frac{1}{24}(4x-1)^{3/2}+C$ **86.** $\frac{1}{2}\ln 2$ **90.** $\frac{1}{4}$ **94.** $\frac{1}{4}f(x)^4+c$

Section 5.7

6. $\ln 2$

Section 6.3

12. $\frac{\pi}{2}$ **14.** **a)**



b) washer

$R=2x+3$; $r=x^2$

c) $\frac{1088\pi}{15}$

Section 7.2

4. $\frac{1}{4}x\sin 4x+\frac{1}{16}\cos 4x+C$ **50.** $\frac{\pi}{4}-\frac{1}{2}\ln 2$

Section 7.3

2. $-\cos x+\frac{2}{3}\cos^3 x-\frac{1}{5}\cos^5 x+C$ **9.** $\frac{3}{8}y+\frac{1}{4}\sin 2y+\frac{1}{32}\sin 4y+C$

10. $\frac{1}{8}\theta-\frac{1}{32}\sin 4\theta+C$ **14.** $\frac{1}{4}\tan^4 x+C$

11. $\frac{1}{16}x-\frac{1}{64}\sin 4x-\frac{1}{48}\sin^3(2x)+C$ **26.** $-\frac{1}{499}\cos^{499} y+\frac{1}{501}\cos^{501} y+C$

32. $\frac{1}{5}\sec^5\theta-\frac{1}{3}\sec^3\theta+C$ **36.** $\frac{1}{9}\tan^9 x+\frac{1}{7}\tan^7 x+C$