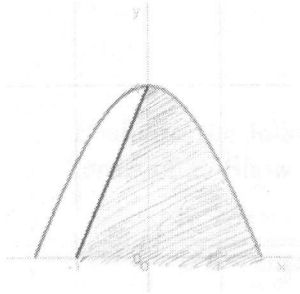
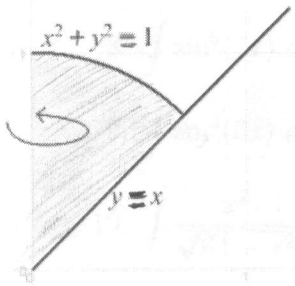
Math 232 Prof. Ilya Kofman **Exam 1** **March 4, 2013** Name: _____
Justify answers and show all work for full credit.

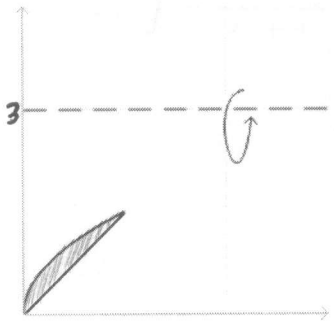
1. Find the area of the region bounded by $y=\cos^3(x)$, $y=x+1$ and the x-axis.



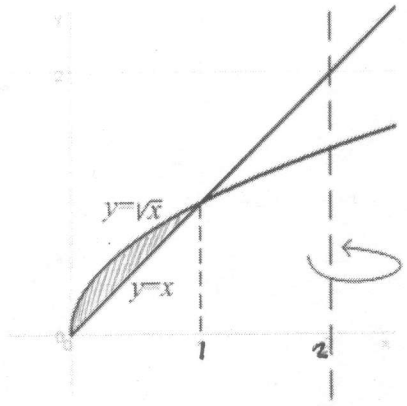
2. Find the volume of the solid by rotating the region shown about the y-axis. Use shell method.



3. Find the volume of the solid by rotating $\{(x,y): 0\le x\le 1, x\le y\le\sqrt{x}\}$ about the line $y=3$.



4. Find the volume of the solid by rotating $\{(x,y): 0\le x\le 1, x\le y\le\sqrt{x}\}$ about the line $x=2$.



Evaluate the following integrals. Make sure your final answers are only in terms of x. Show all work for full credit!

5. $\displaystyle\int \frac{\cos x}{\sqrt{1-\sin x}}\,dx$

6. $\displaystyle\int 7x^2\cos(5x)\,dx$

7. $\displaystyle\int_0^2 4x\,e^{-3x}\,dx$

8. $\displaystyle\int \sin^5(7x)\,dx$

9. $\displaystyle\int \sin^2(6x)\,dx$

10. $\displaystyle\int \frac{x^2}{\sqrt{64-x^2}}\,dx$

11. $\displaystyle\int \frac{2x^2+3x-11}{(x-3)(x+1)^2}\,dx$

12. $\displaystyle\int \frac{3x^3+27x+4}{x^2+9}\,dx$