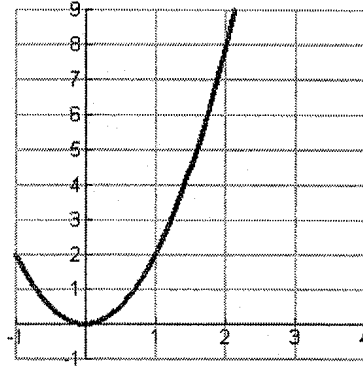


**Volume – Disk and Washer  
Practice**

Find the volume of the solid generated by revolving the region bounded by the graphs of  $y = 2x^2$ ,  $y = 0$  and  $x = 2$  about the given lines.



1) x - axis

2)  $y = -2$

3)  $y = 8$

4)  $y = 10$

5)  $y$ -axis

6)  $x = -1$

7)  $x = 2$

8)  $x = 4$

9. Find the volume of the solid resulting from rotating the region enclosed by  $y=x^2$  and  $y=x^3$  about the vertical line  $x=1$ .

10. Find the volume of the solid resulting from rotating the region enclosed by  $y=\sin x$  and  $y=x^2$  about the horizontal line  $y=1$ .

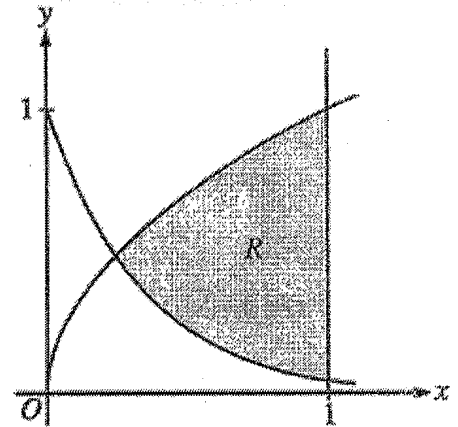
11. Find the volume of the solid resulting from rotating the region enclosed by  $y=x^2$  and  $y=x^3$  about the vertical line  $x=-1$ .

12. Find the volume of the solid resulting from rotating the region enclosed by

$y = \sin x$  and  $y = x^2$  about the horizontal line  $y = -1$ .

Let  $R$  be the shaded region bounded by the graphs of  $y = \sqrt{x}$  and  $y = e^{-3x}$  and the vertical line  $x = 1$ , as shown in the figure above.

(a) Find the area of  $R$ .



(b) Find the volume of the solid generated when  $R$  is revolved about the horizontal line  $y = 1$ .

(c) The region  $R$  is the base of a solid. For this solid, each cross section perpendicular to the  $x$ -axis is a rectangle whose height is 5 times the length of its base in region  $R$ . Find the volume of this solid.