

Show all work on other paper.

1. Find the area of the region bounded by  $y = x^2$  and  $y = x^3$
2. Find the area of the region bounded by  $y = \sqrt{3x} + 1$ ,  $y = x$ , and  $x = 0$ .
3. Find the area of the region bounded by  $y = x^3 - 2x^2 - 2x$  and  $y = 3x^2 - 6x$
4. Find the volume of the solid formed by revolving the region enclosed by  $y = x + 1$ ,  $y = 0$ ,  $x = 0$ , and  $x = 3$ 
  - a. about the x-axis
  - b. about the line  $x = 4$
5. Find the volume of the solid formed by revolving the region enclosed by  $y = 4 - x$ ,  $y = 0$ , and  $x = 0$ 
  - a. about the y-axis
  - b. about the line  $y = 4$
6. Find the volume of the solid formed by revolving the region enclosed by  $y = -x^2 + 3x + 4$  and  $y = 0$ 
  - a. about the x-axis
  - b. about the line  $y = -1$
7. Find the volume of the solid formed by revolving the region enclosed by  $y = 1 + \sqrt{x}$ ,  $x = 0$ ,  $y = 1$ , and  $x = 4$ 
  - a. about the line  $x = 4$
  - b. about the x-axis
8. Find the volume of the solid formed by revolving the region enclosed by  $y = 2 - x$ ,  $y = 2x - 1$ , and  $x = 0$ 
  - a. about the y-axis
  - b. about the line  $x = 2$
9. Find the volume of the solid formed by revolving the region enclosed by  $y = x^2 + x$  and  $y = 6$ 
  - a. about the line  $y = 6$
  - b. about the line  $y = -4$