

**Section 6.2: Volume by Shells - Worksheet**

1. Find the volume of the solid of revolution obtained by revolving the given region about the given axis using (i) the method of cylindrical shells and (ii) the method of disks/washers.
  - (a) The region bounded by the  $y$ -axis, the curve  $y = 5\sqrt{x}$  and the line  $y = 10$  revolved about the line  $x = -2$ .
  - (b) The region in the first quadrant bounded by the curves  $y = 9 - x^2$  and  $y = 1 - \frac{1}{3}x$  revolved about the line  $y = 9$ .
  - (c) The region below the graph of  $y = \frac{2}{\sqrt{x+1}}$  for  $0 \leq x \leq 3$  revolved about the  $y$ -axis.
  - (d) The region below the graph of  $y = \frac{2}{\sqrt{x+1}}$  for  $0 \leq x \leq 3$  revolved about the  $x$ -axis.
  
2. Find the volume of the solid of revolution obtained by revolving the given region about the given axis using the method of cylindrical shells.
  - (a) The region bounded by the curve  $y = 3\sqrt{\ln(x)}$ , the line  $y = 3$  and the line  $x = 1$  revolved about the  $x$ -axis.
  - (b) The region below the graph of  $y = \frac{1}{16 + x^4}$  for  $0 \leq x \leq 2$  revolved about the  $y$ -axis.
  - (c) The region bounded by the curve  $x = 4 - (y + 1)^2$ , the line  $x = 4$  and the line  $y = x + 7$  revolved about the line  $y = -5$ .