(6.3) Volumes by Cylindrical Shells

Full Name: _____

1. Sketch the region enclosed by the graphs of the given equations. Then, use a definite integral to find the exact value of the volume of revolution obtained by rotating the region about the given axis of revolution.

   (a) $y = \dfrac{1}{\sqrt{x}}, \quad y = 0, \quad x = 2, \quad x = 6$ about the y-axis

   (b) $y = x^2, \quad y = 9x, \quad$ about $x = -1$

   (c) $y = 4x, \quad y = 4x^2 - x^3$ about the $x = -1$

(d) $y = x, \quad y = x + 2, \quad x = 0, \quad x = 4$ about the $x = -3$

(e) $y = e^x, \quad y = 0, \quad x = 1, \quad x = 2$ about $x = -2$

(f) $y = \ln x, \quad y = 0, \quad x = 2, \quad$ about $y = -1$