Section 7.2

1. **Find the volume of the solid obtained by revolving the region bounded by $y = e^x$, $y = 0$, $x = 0$, $x = 1$ about the x-axis.**

2. Find the volume of the solid obtained by revolving the region bounded by $y = 3x^2$, $0 \leq x \leq 2$, $y = 12$ and $x = 0$ about the y-axis.

3. Find the volume of the solid obtained by revolving the region bounded by $y = x^2$, $y = 4x$, about the x-axis, then the y axis.

4. Find the volume of the solid obtained by revolving the region bounded by $y = x^2$, $y = 4$, about the line $y = 4$.

5. Find the volume of the solid obtained by revolving the region bounded by $x = y^2$, $x = 1$, about the line $x = 1$.

6. Find the volume of the solid obtained by revolving the region bounded by $y = x$, $y = \sqrt{x}$, about the line $x = -1$.

7. Find the volume of the solid S described here: The base of S is the region bounded by $y = x^2$ and $y = 4$. Cross-sections perpendicular to the y axis are equilateral triangles.

8. Find the volume of the solid S described here: The base of S is the triangular region with vertices $(0, 0)$, $(3, 0)$ and $(0, 2)$. Cross-sections perpendicular to the x axis are semi-circles.

9. Find the volume of the solid S described here: The base of S is the ellipse $\frac{x^2}{4} + \frac{y^2}{16} = 1$. Cross sections perpendicular to the y-axis are squares.

Section 7.3

10. Find the volume of the solid obtained by rotating the region bounded by the given curve(s) about the specified axis.

a.) $y = \frac{1}{x^2}$, $x = 2$, $x = 4$, $y = 0$ **about the** y **axis.**

b.) $y = x^2$, $y = 16$, $x = 0$ **about the** x**-axis.**

c.) $y = x^2$, $y = 3x$. Rotate around the x-axis. Now rotate around the y axis.

d.) $y = x^3$, $y = 0$, $x = 1$, $x = 2$. Rotate around the line $x = -1$.

e.) $y = \sqrt{x}$, $x = 0$, $x = 4$, $y = 0$. **Rotate around the line** $y = 3$.

f.) $y = \cos x$, $y = 0$, $x = 0$, $x = \dfrac{\pi}{2}$. **Rotate around the line $y = 1$. Now rotate around the line $x = \dfrac{\pi}{2}$. Do not evaluate either integral.**

g.) $y = \ln x$, $y = 0$, $x = 4$ about the y axis. Do not evaluate the integral.

h.) $y = \sqrt{x}$, $y = 2 - x$, $y = 0$, around the x-axis. Find the volume using two different techniques of your choosing.