## MATH 236 CALCULUS 2 AREA BETWEEN CURVES AND VOLUME OF REVOLUTION

1. Evaluate the integral and interpret it as the area of a region. Sketch the region.

(1) 
$$\int_0^{\pi} |\sin x - \cos x| dx$$

- (2)  $\int_0^4 |\sqrt{x+2} x| dx$
- 2. Each integral represents the volume of a 3D object. Describe that object.

(1)  $\pi \int_0^{\frac{\pi}{2}} \cos^2 x dx$ 

(2)  $\pi \int_0^1 y^4 - y^8 dy$ 

3. Determine the volume of the solid obtained by rotating the region bounded by  $y = x^2 - 2x$  and y = x about the y = 4 axis.

4. Determine the volume of the solid obtained by rotating the region bounded by  $y = 2\sqrt{x-1}$  and y = x-1 about the x = -1 axis.

5. Determine the volume of the solid obtained by rotating the region bounded by  $y = \sqrt[3]{x}$  and  $y = \frac{x}{4}$  in the first quadrant about the *y*-axis.

6. Determine the volume of the solid obtained by rotating the region bounded by  $y = x^2 - 4x + 5$ , x = 1, and x = 4 about the x-axis.