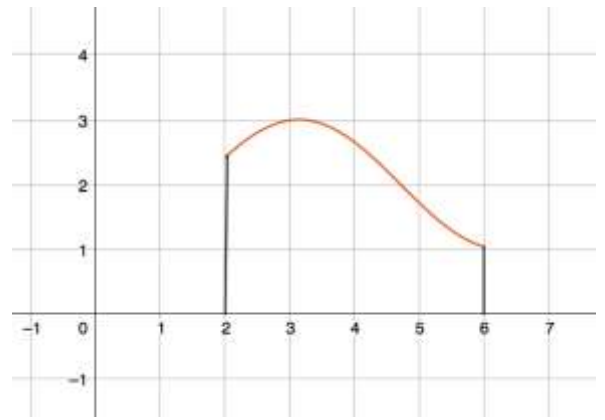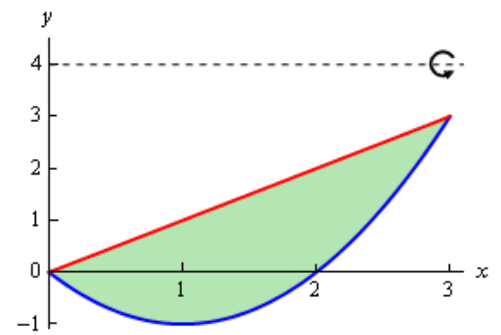1. Find the volume of the solid generated by revolving the region bounded by $f(x) = 2 - \cos x$ and the vertical lines $x = 2$ and $x = 6$ about the x-axis. Show all work (No calculator)
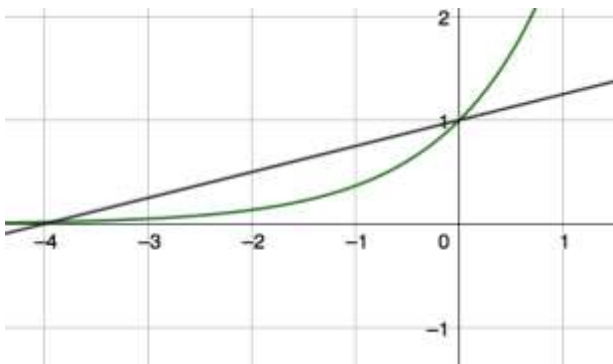
2. Set-up a single integral to calculate the volume of the solid generated when the region bounded by $f(x) = x^2 - 2x$ and $g(x) = x$ is revolved around the axis $y = 4$. Then use a calculator to find that volume.

I-A5b

3. Let R be the region bounded by $g(x) = e^x$ and $h(x) = \frac{1}{4}x + 1$. Find the volume of the solid formed by revolving R about the vertical line $x = 1$. (Calc ok)
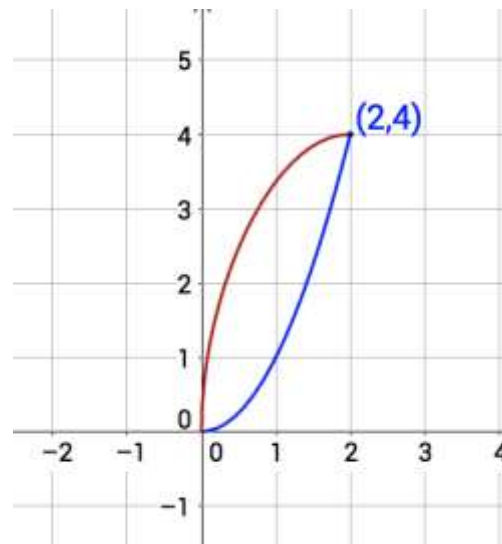
I-A5c

Let R be the first-quadrant region enclosed by

$f(x) = 4\sqrt{\sin(\frac{\pi x}{4})}$ and $g(x) = x^2$.

4. Let R be the base of a solid whose cross-sections perpendicular to the x-axis are semicircles. Find the volume of this solid. (Calc ok)

(2,4)

5. Let R be the base of a solid whose cross-sections perpendicular to the x-axis are rectangles with height three times as long as the base. Find the volume of this solid. (Calc ok)

I-A7a

6. Find the average value of $f(x) = \frac{1}{x}$ over the interval $[1,3]$. (No Calc)

(calc ok)

7. Let $Q'(t) = 1 - \cos(\frac{\pi t}{5})$ model the rate, in hundreds of people per hour, enter an amusement park. Using correct units, explain the meaning of $\frac{1}{5}\int_2^7 Q'(t)\, dt$ in context. Then, find its value.