Math 106, Spring 2024

HOMEWORK #22 LAST ONE!!

Due TUESDAY, May 7th in Gradescope by 11:59 pm ET.

Volumes of Revolution

For all problems, make sure to Sketch both the bounded 2-D region and the 3-D solid. Also, Sketch one Approximating Rectangle on the 2-D sketch and then one Approximating Disk or Washer on the 3-D sketch.

Please write all Formulas clearly before substituting.

1. Consider the region bounded by $\sqrt{x-1}$ and $y = 0$ and $x = 5$. Rotate this region about the x-axis. **Compute** the resulting Volume. Sketch.

2. Consider the region bounded by $y = x$ and the x-axis and between $x = 0$ and $x = 3$. Rotate about the horizontal line $y = -2$. **Compute** the resulting Volume. Sketch.

3. Consider the region bounded by $y = x^2$, $y = 1$ and $x = 0$, with $x \geq 0$. Rotate the region about the x-axis. Set-Up **but DO NOT COMPUTE** the integral that represents the resulting Volume. Sketch.

4. Consider the region bounded by $y = e^x + 1$ and $y = 4$ and $x = 0$.

(a) **Compute** the Area of the original bounded region in 2 Dimensions.

(b) Rotate the bounded region about the x-axis. Set-Up **but DO NOT COMPUTE** the integral that represents the resulting Volume. Sketch.

5. Consider the region bounded by $y = \cos x$ and $y = \sin x$ and between $x = 0$ and $x = \dfrac{\pi}{4}$. Rotate about the horizontal line $y = -1$. Set-Up **but DO NOT COMPUTE** the integral that represents the resulting Volume. Sketch.

REGULAR OFFICE HOURS

Monday: 12:00–3:00 pm

Tuesday: 1:00–4:00 pm

7:30–9:00 pm TA Alexa, SMUDD 208a

Wednesday: 1:00-3:00 pm

Thursday: none for Professor

6:00–7:30 pm TA Alexa, SMUDD 208a

Friday: 12:00–2:00 pm

- LAST ONE!!!!!!!!!
- Please fill out my Teaching Evaluations from your email link.
- Prepare for the Final Exam using the Study guides and Calendar.