

Homework #20

Due **WEDNESDAY, December 10th** in Gradescope by 11:59 pm

Goal: Computing Area bounded by Polar curves.

For **all** problems below, **sketch** the Polar curve(s) and **shade** the described bounded region.

1. Find the Area enclosed by $r = 1 - \sin \theta$.
2. Set-Up but **DO NOT EVALUATE** another slightly different Integral representing the same area of the described bounded region in #1.
3. Find the Area inside $r = 4 \sin \theta$ and outside $r = 2$
4. Set-Up but **DO NOT EVALUATE** another slightly different Integral representing the same area of the described bounded region in #3.
5. Find the Area inside $r = 3 \cos \theta$ and outside $r = 1 + \cos \theta$
6. Set-Up but **DO NOT EVALUATE** another slightly different Integral representing the same area of the described bounded region in #5.
7. Find the Area of the region that lies inside both curves $r = 1 + \cos \theta$ and $r = 1 - \cos \theta$.
8. Set-Up but **DO NOT EVALUATE** another slightly different Integral representing the same area of the described bounded region in #7.
9. Find the Area of the region that lies inside both curves $r = 3 + 2 \cos \theta$ and $r = 3 + 2 \sin \theta$. Use the Cartesian coordinate plot to help sketch the Polar curves.
10. Set-Up but **DO NOT EVALUATE** another slightly different Integral representing the same area of the described bounded region in #9.

Review: Compute the following Integrals.

11. $\int_{-4}^{-3} \frac{8-x}{x^2+2x-8} dx$

12. $\int_{-\infty}^0 \frac{8}{x^2-2x+4} dx$

Last One!!!

We made it!! Thank you so much for working hard. I really appreciate it!

REGULAR OFFICE HOURS

Monday: 12:00–3:00 pm

6–9:00pm TAs Emma/Myles, SMUDD 204

Tuesday: 1:00–4:00 pm

5:30–7:00 pm TA Julia, SMUDD 204

7:30-9:00 pm TA Emma, SMUDD 204

Wednesday: 1:00-3:00 pm

6–10:30 pm TAs Julia/Myles/Natalie, SMUDD 204

Organize your study schedule for the Final Exam.