Math 121, Section(s) 01, 02, Fall 2024

Homework #20

Due **Wednesday, December 11th** in Gradescope by 11:59 pm ET

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

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

Last One!!!

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

REGULAR OFFICE HOURS

Sunday 6:00–9:00 pm TAs Natalie/Oscar, SMUDD 207

Monday: 12:00–3:00 pm

6:00–9:00 pm TAs Aaron/Oscar, SMUDD 207

Tuesday: 1:00–4:00 pm

6–7:30 pm TA Gretta, SMUDD 207

Wednesday: 1:00-3:00 pm

7:30–9:00 pm TA Natalie, SMUDD 207

Thursday: none for Professor

extras may be added, TBD weekly

6–9:00 pm TAs Gretta/DJ, SMUDD 207

Friday: 12:00–3:00 pm

6:00–9:00 pm TAs Aaron/DJ, SMUDD 207

Organize your study schedule for the Final Exam.