Homework #20 (Last one!!!)
Due **Wednesday, December 11** in Gradescope by **11:59 pm ET**

- **REVIEW** your class notes about Taylor and MacLaurin series
- **CONSULT** Section 10.4 of the Stewart Calculus textbook
- **WRITE AND SUBMIT** solutions to the 10 assigned problems in this handout

NOTE: Show your work, as always.

Assigned Problems for HW 20

Exercises 1–10. For **all** problems below, **sketch** the Polar curve(s) and **shade** the described bounded region, in addition to setting up all the integrals requested (and, for the odd-numbered problems, computing them).

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.

My (Drop-In) Office Hours: SMUD 406

Tuesday: 1:30–3:00 pm
Thursday: 1:30–3:00 pm
Friday: 2:00–3:00 pm
(or by appointment)

Math Fellow Evening Drop-in Hours: SMUD 207

Sunday	6:00–7:30pm:	**Natalie** Stott
Sunday	7:30–9:00pm:	**Oscar** Hernandez
Monday	6:00-7:30pm:	**Aaron** Cordoba
Monday	7:30–9:00pm:	**Oscar** Hernandez
Tuesday	6:00-7:30pm:	**Gretta** Ineza
Wednesday	7:30–9:00pm:	**Natalie** Stott
Thursday	6:00-7:30pm:	**Gretta** Ineza
Thursday	7:30–9:00pm:	**DJ** Beason
Friday	6:00-7:30pm:	**Aaron** Cordoba
Friday	7:30–9:00pm:	**DJ** Beason

• My Office Hours are times to drop in to my office, unannounced. Math Fellow hours are also for unannounced drop-ins, in SMUD 207, at the hours above.
All are welcome! Just stop by. Working on your calculus assignment can be fun! I encourage you to come hang out at many of these help sessions.

• **NO LATE HOMEWORK!** unless illness or emergency occurs.