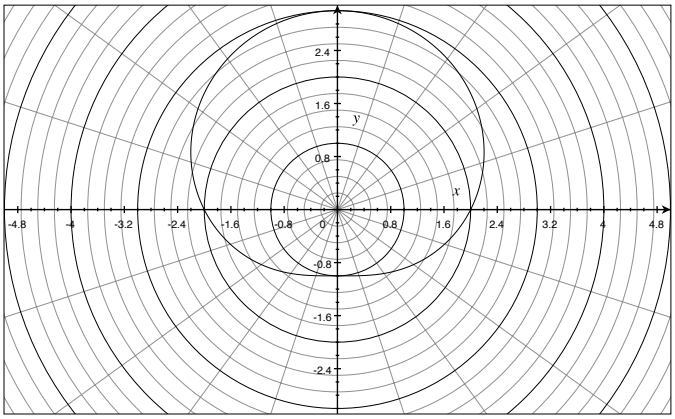
East Los Angeles College
Department of Mathematics
Math 262
Test 4

Show Work for Credit

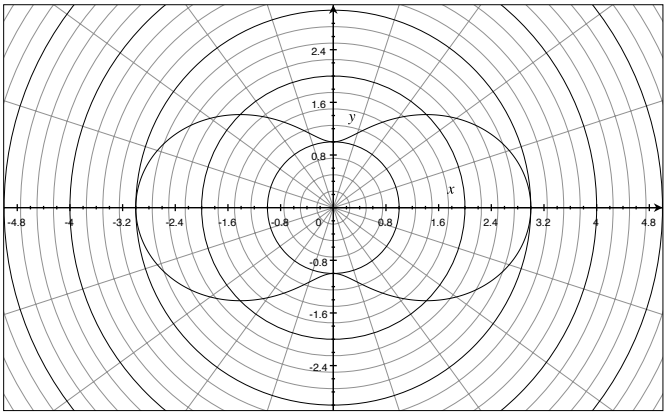
Determine points on the curve where the tangent line is vertical and horizontal.

1. $r = 2 + sin(\theta)$



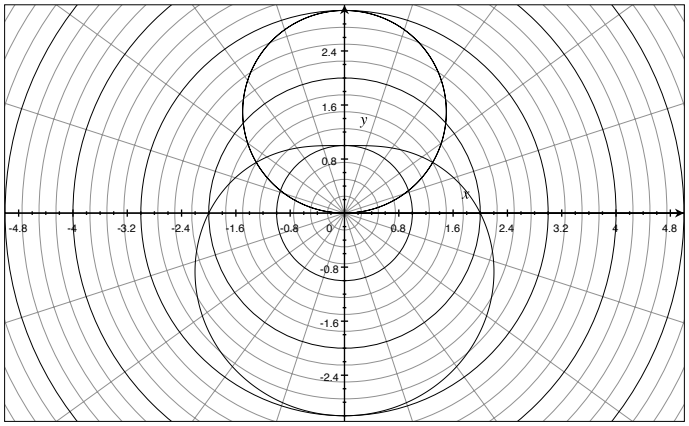
Determine the area that is enclosed by the curve.

2. $r = 2 + cos(2\theta)$



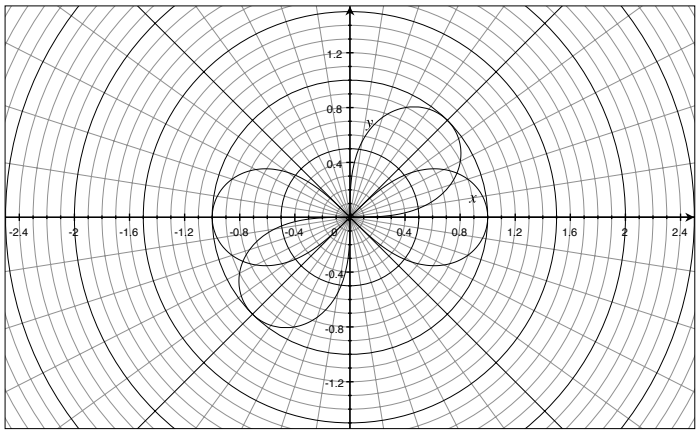
Find the area that lies inside the first curve and outside the second curve.

3. $r = 3sin(\theta)$ and $r = 2 - sin(\theta)$



Find the area of the region that lies inside both curves.

4. $r^2 = sin(2\theta)$ and $r^2 = cos(2\theta)$



Determine the exact length of the polar curve.

5. $r = e^{2\theta}$ for $0 \leq \theta \leq 2\pi$

Determine whether the sequence converges or diverges. If it converges find its limit.

6. $a_n = \frac{n^3}{n+1}$

7. $a_n = \sqrt{\frac{n+1}{9n+1}}$

8. $a_n = tan\left(\frac{2n\pi}{1+8n}\right)$

9. $a_n = \frac{e^n + e^{-n}}{e^{2n}-1}$

Determine whether the series converges or diverges. If it converges, find its sum.

10. $\sum_1^\infty \sqrt[n]{5}$

11. $3 - 4 + \frac{16}{3} - \frac{64}{9} + \ldots$

12. $\sum_1^\infty ln\left(\frac{n^2+1}{2n^2+1}\right)$

13. $\sum_1^\infty \frac{3}{n(n+1)}$

14. $\sum_1^\infty 5(0.8)^{n-1}$

15. $\sum_1^\infty (\cos(1))^n$