**Math 2414 – Calculus II** ***Exam* 4 *Review***

*Instructor*: Fred Khoury

1. Give parametric equations and parameter intervals for the motion of a particle in the *xy*-plane. Identify the particle’s path by finding a Cartesian equation for it. Graph the Cartesian equation.
2. 
3. 
4. 
5. 
6. 
7. 
8. Find a parametric equations and a parameter interval for the motion of a particle in the *xy*-plane that traces the ellipse  once counterclockwise.
9. Find a parametric equations and a parameter interval for the motion of a particle starting at the point  and tracing the circle  three times clockwise.
10. Find the tangent to the curve at the point defined by the given value of *t*. 
11. Find the tangent to the curve at the point defined by the given value of *t*. Also find the value of  at this point
12. 
13. 
14. Find the length of the curves
15. 
16. 
17. 
18. Replace the polar equation with equivalent Cartesian equation
19. 
20. 
21. 
22. 
23. 
24. 
25. 
26. 
27. 
28. Replace the Cartesian equation with equivalent polar equation
29. 
30. 
31. 
32. 
33. 
34. 
35. 
36. Find the area of the region in the polar coordinate plane
37. Enclosed by the limaçon 
38. Enclosed by one leaf of the three-leaved rose 
39. Inside the cardioid  and outside the circle 
40. Find the length of the curve given by the polar coordinate equation
41. 
42. 
43. 
44. 
45. Sketch the graph of the polar equation
46. 
47. 
48. 
49. 

***Answers***

1.   

  

1. 
2. 
3. 
4. 



1.   
2.    

  

 

1.    

  

1.   
2.    







