

## Math 241, Sections BL1 and BL2

### Quiz # 4

October 18, 2012

Solve both exercises. Show work to get credit.

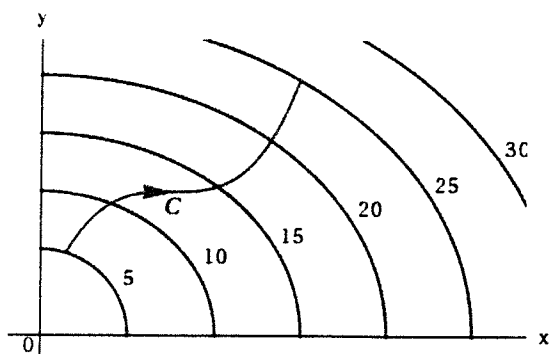
1) [5pts.] Evaluate the line integral

$$\int_C \sin x \, dy + \cos y \, dy,$$

where  $C$  consists of the top half of the circle  $x^2 + y^2 = 16$  from  $(4, 0)$  to  $(-4, 0)$  followed by the line segment from  $(-4, 0)$  to  $(-5, 5)$ . (Note: One of the properties of conservative vector fields may simplify your calculation.)

2) [5pts.] (a) The figure below shows a curve  $C$  and a contour map of a function  $f$  whose gradient is continuous. Find

$$\int_C (\nabla f) \cdot d\vec{r}.$$



(b) A table of values of a function  $f$  with continuous gradient is given. Find

$$\int_C (\nabla f) \cdot d\vec{r},$$

where  $C$  has the parametric equations

$$x = t^4 + 1, \quad y = t^3 + t, \quad t \in [0, 1].$$

$x \backslash y$	0	1	2
0	1	6	4
1	1	5	9
2	6	3	9