

MATH 251, Section \_\_\_\_\_  
Thursday, Nov. 11, 2010

Quiz 11 (Sections 14.2, 14.3).  
Dr. M. Vorobets

NAME (print): \_\_\_\_\_

**No credit for unsupported answers will be given. Clearly indicate your final answer.**

1. [4 pts.] Evaluate the line integral  $\int_C xy^2 ds$  if  $C$  is the right half of the circle  $x^2 + y^2 = 16$ .

2. [3 pts.] Find  $\int_C \vec{F} \cdot d\vec{r}$  if  $\vec{F} = (y + z)\vec{i} - x^2\vec{j} - 4y^2\vec{k}$  and  $C$  is given by  $\vec{r}(t) = t\vec{i} + t^2\vec{j} + t^4\vec{k}$ ,  $0 \leq t \leq 1$ .

[more problems on back]

3. [3 pts.] Determine whether or not the vector field

$$\vec{F}(x, y) = (x^2 + y)\vec{i} + (y^2 + x)\vec{j}$$

is conservative. If it is, find a function  $f$  such that  $\vec{F} = \nabla f$ .