

Name \_\_\_\_\_ Date \_\_\_\_\_

Instructions: Please show all of your work as partial credit will be given where appropriate, **and** there may be no credit given for problems where there is no work shown. All answers should be completely simplified, unless otherwise stated.

1. (15 points) Determine whether  $\mathbf{F}(x, y) = (e^x \sin y + 1)\mathbf{i} + (e^x \cos y + 6)\mathbf{j}$  is conservative. If so, find a function  $f$  such that  $\mathbf{F} = \nabla f$ . If not, state that  $\mathbf{F}$  is not conservative.

Conservative: True or False (circle one)

4. If conservative,  $f =$  \_\_\_\_\_

2. (15 points) For the vector field given above,

$$\mathbf{F}(x, y) = (e^x \sin y + 1)\mathbf{i} + (e^x \cos y + 6)\mathbf{j} ,$$

calculate the line integral  $\int_C \mathbf{F} \cdot d\mathbf{r}$  from  $(0,0)$  to  $(2, \frac{\pi}{6})$   
using any method you wish.

Answer \_\_\_\_\_

3. (10 points) What.... is your favorite color?

Answer: \_\_\_\_\_