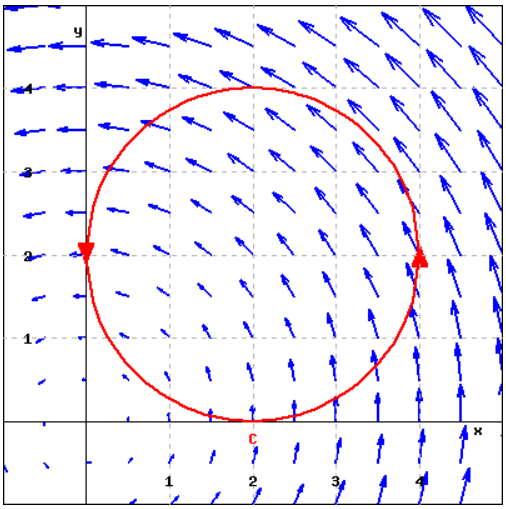
Math 251 **Quiz 10**

December 6, 2013; 10 minutes Name: _____

This quiz is *open-note*, but no books or calculators may be used. You don't need to give any justification for your answers.

1. (6 points) Suppose $\vec{F}(x,y) = \langle 6y\sin(xy), 6x\sin(xy)\rangle$ and $\mathcal{C}$ is the segment of the parabola $y = 2x^2$ from the point $(1,2)$ to $(4,32)$. Find the value of $\int_{\mathcal{C}} \vec{F}\cdot d\vec{s}$. (Note that this is the same as $\int_{\mathcal{C}} \vec{F}\cdot d\vec{r}$.)

2. Consider the vector field $\vec{F}$ and closed path $\mathcal{C}$ as in the figure.



(a) (3 points) Is $\int_{\mathcal{C}} \vec{F}\cdot d\vec{s}$ positive, negative, or zero?

(b) (3 points) True or false: $\vec{F}$ is a conservative vector field.