Each problem is worth 5 points. For full credit indicate clearly how you reached your answer.

1. Compute $\int_C \mathbf{F} \cdot d\mathbf{r}$ for $\mathbf{F}(x,y) = <xy,2x^2>$, where $C$ is the path beginning with a line segment from $(0,0)$ to $(4,0)$, followed by an arc of a circle (centered at the origin) from $(4,0)$ to $(0,4)$, and finally the line segment from $(0,4)$ to $(0,0)$. 
2. Find $\text{div} \ <3xyz, y^2, x^3y^4>$. 

3. Find $\text{curl} \ <2x, -z, y>$. 