MATH 251, Section _____ Quiz 12 (Sections 14.4, 14.5).
Thursday, Nov. 11, 2010 Dr. M. Vorobets

Due Tuesday, Nov. 16 at the beginning of class.

NAME (print): _____

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

1. *[3 pts.]* Use Green's Theorem to evaluate $\oint_C (1+\tan x)dx + (x^2+e^y)dy$ where C is the positively oriented boundary of the region enclosed by the curves $y=\sqrt{x}$, $x=1$, and $y=0$.

2. *[2 pts.]* Find the divergence of the vector field $\vec{F} = e^{xyz}\vec{\imath} + \sin(x-y)\vec{\jmath} - \dfrac{xy}{z}\vec{k}$.

[more problems on back]

3. *[5 pts.]* Show that $\vec{F}(x,y,z) = yz(2x+y)\vec{\imath} + xz(x+2y)\vec{\jmath} + xy(x+y)\vec{k}$ is conservative and use this fact to evaluate $\int_C \vec{F}\cdot d\vec{r}$ along the curve C given by $\vec{r}(t) = (1+t)\vec{\imath} + (1+2t^2)\vec{\jmath} + (1+3t^3)\vec{k}$, $0 \le t \le 1$.