Math 392 Quiz 7A
March 11, 2019

Name: ____

Instructions: No calculators! Answer <u>all</u> problems in the space provided! Do your rough work on scrap paper.

1. Define the following:

   $(a)\ \int_C f(x,y)\,ds =$ ______________________________

   $(b)\ \int_C \vec{F}\cdot d\vec{r} =$ ______________________________

   $(c)\ \int_C f(x,y)\,dx =$ ______________________________

   (where C is a smooth curve parametrized by $\vec{r}(t) =< x(t), y(t) >$. No shorthand, flesh out full definition.)

2. State the equation in the fundamental theorem for line integrals: ______________________________

3. State the equation in Green's Theorem: ______________________________

4. What does it mean to say "$\vec{F}$ is conservative"? ______________________________

5. Let $\vec{F} =< P(x,y), Q(x,y) >$ be defined on an open, simply connected domain D. Suppose P and Q have continuous first partial derivatives on D. What equation would you use to check if $\vec{F}$ is conservative? ________________

6. Let $\vec{F} =< P(x,y), Q(x,y), R(x,y) >$ be defined on an open, simply connected domain D. Suppose P, Q, and R have continuous first partial derivatives on D. What equation would you use to check if $\vec{F}$ is conservative? ________________

7. Let $\vec{F} =< x\sin y\ ,\ x^2ye^z\ ,\ z\tan(xz)\ >$, compute:

   (a) $curl\vec{F} =$ ______________________________

   (b) $div\,\vec{F} =$ ______________________________

8. If $curl\vec{F} = \vec{0}$, then $\vec{F}$ is called ______________________________