

Math 392 Quiz 7B

March 11, 2019

Name: _____

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

1. Define the following:

$$(a) \int_C f(x, y) dy = \underline{\hspace{10cm}}$$

$$(b) \int_C \vec{F} \cdot d\vec{r} = \underline{\hspace{10cm}}$$

$$(c) \int_C f(x, y) ds = \underline{\hspace{10cm}}$$

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

2. What does it mean to say " \vec{F} is conservative"? _____

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

4. State the equation in the fundamental theorem for line integrals: _____

5. If $\text{curl} \vec{F} = \vec{0}$, then \vec{F} is called _____

6. Let $\vec{F} = \langle P(x, y), Q(x, y) \rangle$ 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? _____

7. Let $\vec{F} = \langle P(x, y), Q(x, y), R(x, y) \rangle$ 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? _____

8. Let $\vec{F} = \langle y \cos x, xy^3e^z, x \tan(yz) \rangle$, compute:

(a) $\text{curl} \vec{F} = \underline{\hspace{10cm}}$

(b) $\text{div} \vec{F} = \underline{\hspace{10cm}}$