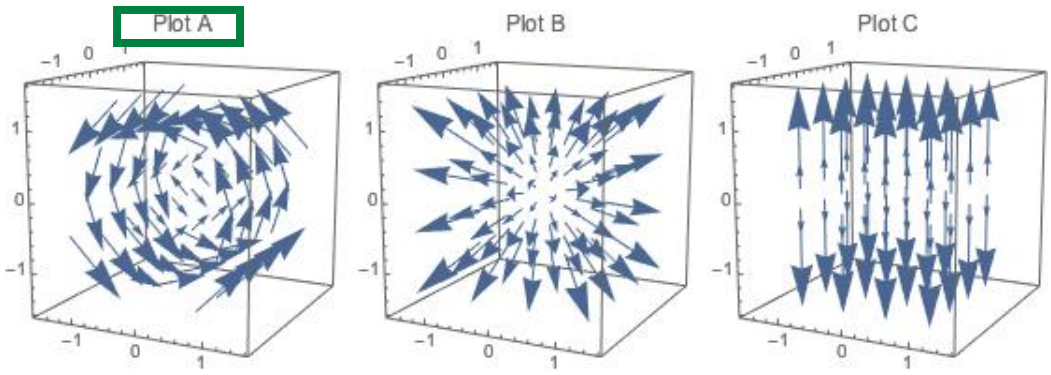
Quiz 6 v. B

Name: _____

UW email address: _____

Indicate the correct answer for the questions below. You do not need to justify your answers.

1. It is known that one of the three vector fields shown below is **not** conservative. Which one?



Plot A produces work along closed paths (or has nonzero curl)

2. Mark the correct answer: Let $\vec{F}(x,y,z) = \langle P(x,y,z), Q(x,y,z), R(x,y,z)\rangle$ be a vector field in $\mathbb{R}^3$, where P, Q, R have continuous third partial derivatives. Then

$$\vec{F} \cdot \text{curl}(\nabla(\text{div}\, \vec{F}))$$

is

a. A vector field **b.** A scalar function **c.** Undefined (nonsense)

3. Mark the following statement as **true** or **false**. Let $\vec{F}(x,y) = \langle P(x,y), Q(x,y)\rangle$ be a vector field defined on a domain $D \subset \mathbb{R}^2$, with P and Q continuously differentiable on D. If $\frac{\partial Q}{\partial x} = \frac{\partial P}{\partial y}$ on D then $\vec{F}$ is conservative on D.

True **False**

Need simply connected

4. Mark the following sentence as **true** or **false**. If $\vec{F}(x,y)$ is a conservative vector field on a domain $D \subset \mathbb{R}^2$ with continuous coefficients and c_1, c_2 are two curves in D such that they both start at the same point A and they both end at the same point B then

$$\int_{c_1} \vec{F}(x,y) \cdot d\vec{r} = \int_{c_2} \vec{F}(x,y) \cdot d\vec{r}.$$

True **False**

By FTC