

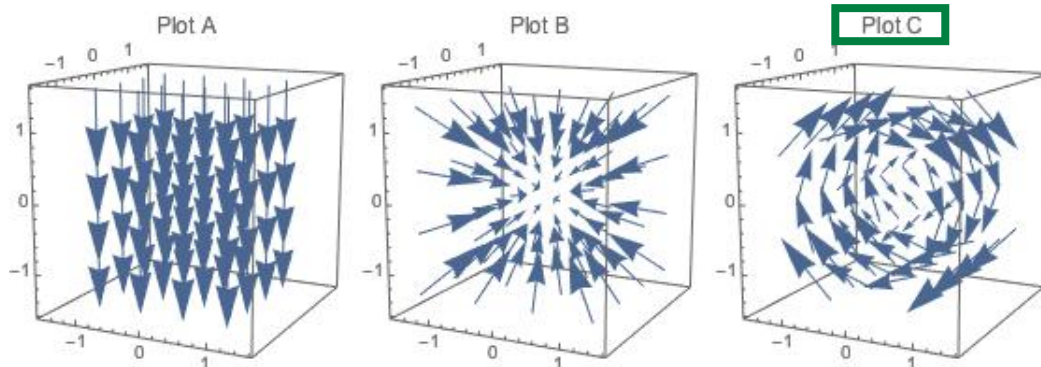
## Quiz 6 v. A

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 C 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

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

is

**a.** A vector field

**b.** A scalar function

**c.** Undefined (nonsense)

3. 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

4. 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**

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