Consider a cube of constant charge density centered at the origin.

True or False: I can use Gauss' Law to find the electric field directly above the center of the cube.

A. True and I can argue how we'd do it.
B. True. I'm sure we can, but I don't see how to just yet.
C. False. I'm pretty sure we can't, but I can't say exactly why.
D. False and I can argue why we can't do it.

We derived that the electric field due to an infinite sheet with charge density σ was as follows:

$$\mathbf{E}(z) = \begin{cases} \frac{\sigma}{2\varepsilon_0}\hat{k} & \text{if} \quad z > 0 \\ \frac{-\sigma}{2\varepsilon_0}\hat{k} & \text{if} \quad z < 0 \end{cases}$$

What does that tell you about the difference in the field when we cross the sheet, $\mathbf{E}(+z) - \mathbf{E}(-z)$?

A. it's zero

B. it's $\frac{\sigma}{\varepsilon_0}$

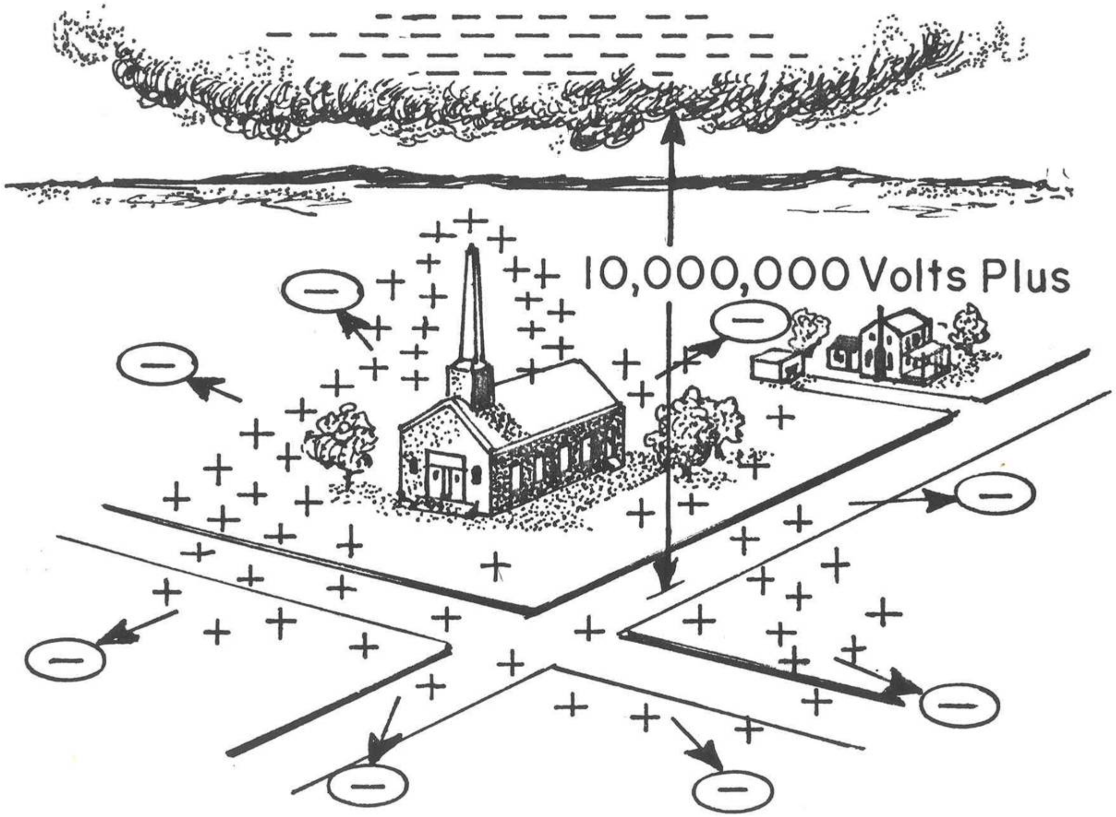
C. it's - $\frac{\sigma}{\varepsilon_0}$

D. it's + $\frac{\sigma}{\varepsilon_0}\hat{k}$

E. it's - $\frac{\sigma}{\varepsilon_0}\hat{k}$

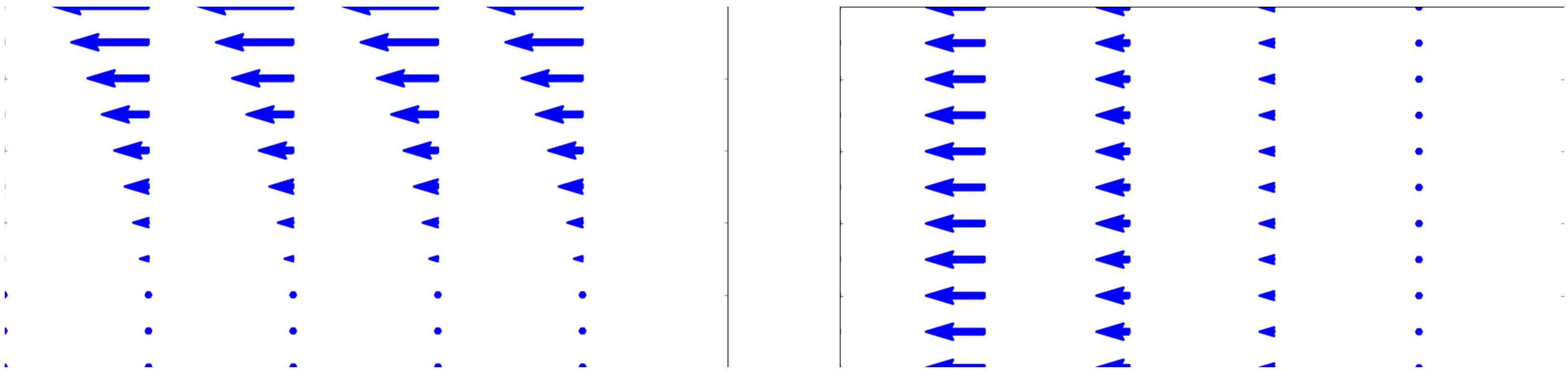
ε_0

ELECTRIC POTENTIAL



Which of the following two fields has zero curl?

I	II



A. Both do.

B. Only I is zero

C. Only II is zero

D. Neither is zero

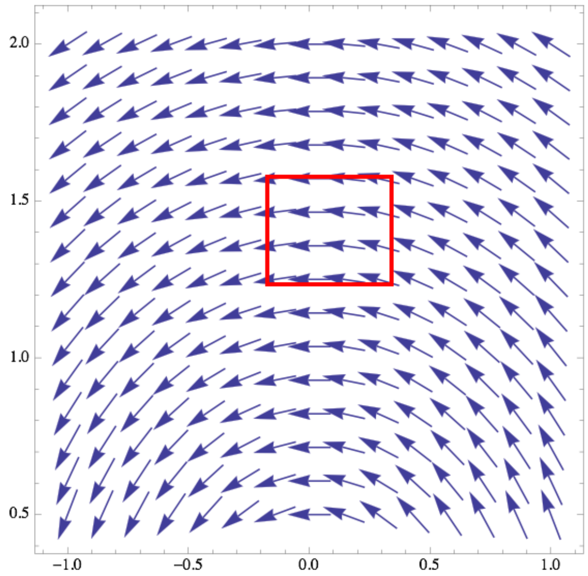
E. ???

What is the curl of the vector field, $\mathbf{v} = c\hat{\phi}$, in the region shown below?

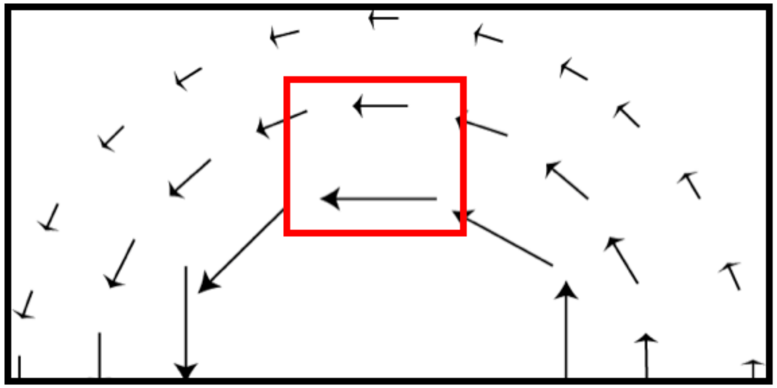
A. non-zero everywhere

B. zero at some points, non-zero at others

C. zero curl everywhere

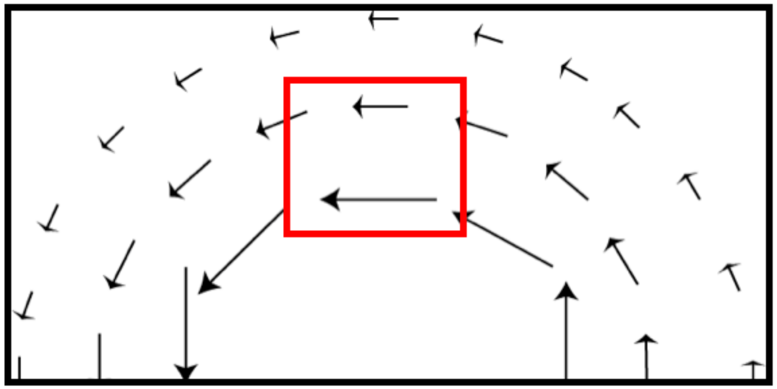


What is the curl of this vector field, in the red region shown below?



A. non-zero everywhere in the box
B. non-zero at a limited set of points
C. zero curl everywhere shown
D. we need a formula to decide

What is the curl of this vector field, $\mathbf{v} = \frac{c}{s}\hat{\phi}$, in the red region shown below?



A. non-zero everywhere in the box

B. non-zero at a limited set of points

C. zero curl everywhere shown