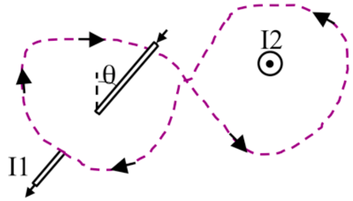
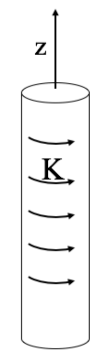
What is $\oint \mathbf{B} \cdot d\mathbf{l}$ around this purple (dashed) Amperian loop?



A. $\mu_0(|I_2| + |I_1|)$
B. $\mu_0(|I_2| - |I_1|)$
C. $\mu_0(|I_2| + |I_1| \sin\theta)$
D. $\mu_0(|I_2| - |I_1| \sin\theta)$
E. $\mu_0(|I_2| + |I_1| \cos\theta)$

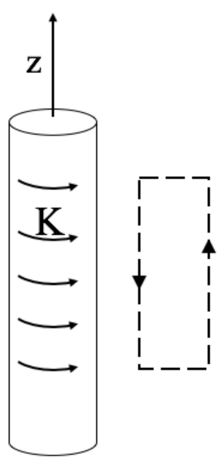
An infinite solenoid with surface current density K is oriented along the z-axis. To use Ampere's Law, we need to argue what we think $\mathbf{B}(\mathbf{r})$ depends on and which way it points.



For this solenoid, $\mathbf{B}(\mathbf{r}) =$

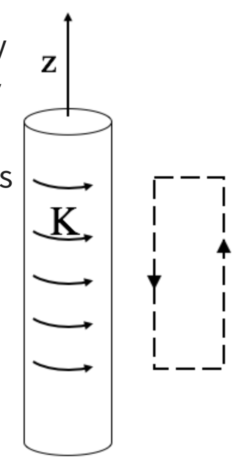
A. $B(z)\,\hat{z}$
B. $B(z)\,\hat{\phi}$
C. $B(s)\,\hat{z}$
D. $B(s)\,\hat{\phi}$
E. Something else?

An infinite solenoid with surface current density K is oriented along the z-axis. Apply Ampere's Law to the rectangular imaginary loop in the yz plane shown. What does this tell you about B_z, the z-component of the B-field outside the solenoid?



A. B_z is constant outside
B. B_z is zero outside
C. B_z is not constant outside
D. It tells you nothing about B_z

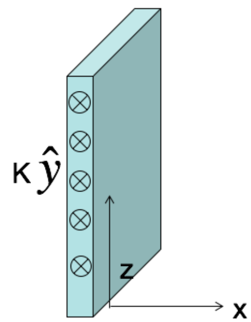
An infinite solenoid with surface current density K is oriented along the z-axis. Apply Ampere's Law to the rectangular imaginary loop in the yz plane shown. We can safely assume that $B(s \to \infty) = 0$. What does this tell you about the B-field outside the solenoid?



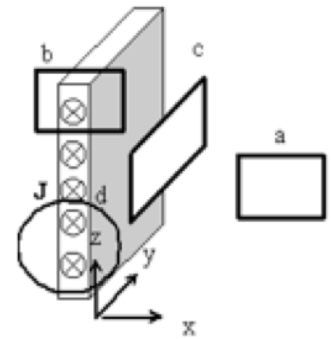
A. $|\mathbf{B}|$ is a small non-zero constant outside
B. $|\mathbf{B}|$ is zero outside
C. $|\mathbf{B}|$ is not constant outside
D. We still don't know anything about $|\mathbf{B}|$

What do we expect $\mathbf{B}(\mathbf{r})$ to look like for the infinite sheet of current shown below?

A. $B(x)\hat{x}$
B. $B(z)\hat{x}$
C. $B(x)\hat{z}$
D. $B(z)\hat{z}$
E. Something else



Which Amperian loop are useful to learn about $B(x, y, z)$ somewhere?



E. More than 1

Gauss' Law for magnetism, $\nabla \cdot \mathbf{B} = 0$ suggests we can generate a potential for $\mathbf{B}$. What form should the definition of this potential take (Φ and $\mathbf{A}$ are placeholder scalar and vector functions, respectively)?

A. $\mathbf{B} = \nabla\Phi$
B. $\mathbf{B} = \nabla \times \Phi$
C. $\mathbf{B} = \nabla \cdot \mathbf{A}$
D. $\mathbf{B} = \nabla \times \mathbf{A}$
E. Something else?!