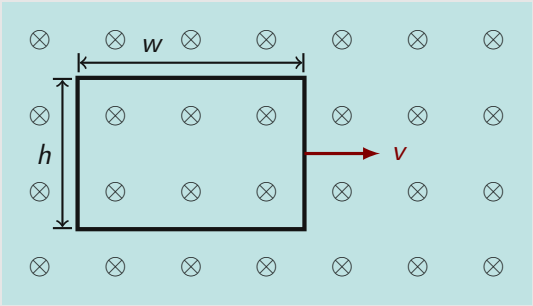
Announcements

- Homework
  - Homework 12 due Wednesday night!
  - I'm all caught up on other homework grading
- Grade reports posted!
- Final
  - Coming at you Friday!
  - Due the 14th at 5pm
  - Probably looking at around 5-6 problems
  - Chapters 6 and 7 will be weighted a bit heavier, but it is comprehensive
  - Come the moment I send it out, my solutions sets will be locked down (figuratively)
  - Computation mainly plotting, Sympy for math help, and relaxation method
- Read through 7.3.3 for Wednesday

Q1

A rectangular metal loop moves through the region of constant uniform magnetic field $\vec{\mathbf{B}}$ with speed v at a particular time. What is the magnetic force on the *loop* at this instant? You can assume the loop has some overall resistance R.



A. 0

B. $\frac{vB^2h^2}{R}$ to the left

C. $\frac{2vB^2h^2}{R}$ to the left

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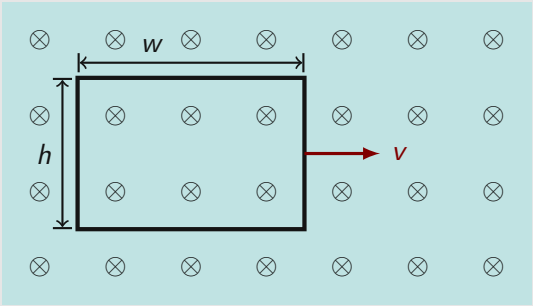

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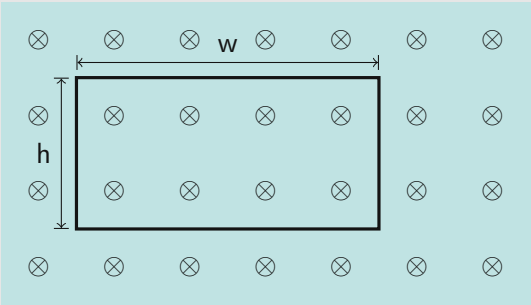
Q2

A stationary rectangular metal loop is in a region of uniform $\vec{\mathbf{B}}$ which has a magnitude which is decreasing with time:

$$B = B_0 - kt$$

What is the direction of the magentic field generated by the induced current in the loop? (Say at the center of the loop.)

A. Into the page
B. Out of the page
C. To the left
D. To the right



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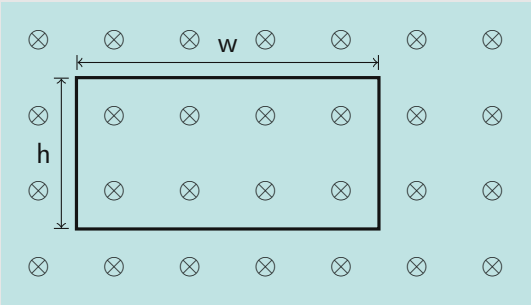
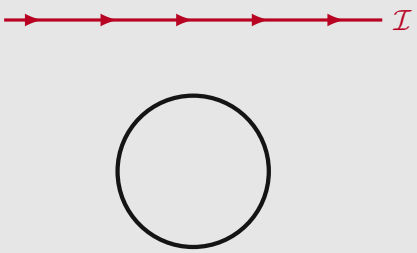


Q3

A loop of wire is near a long straight wire which is carrying a large current $\mathcal{I}$ which happens to be decreasing. The loop and the straight wire are the same plane and are positioned as shown. The current induced in the loop is:

A. CCW
B. CW
C. 0
D. Not enough info to say



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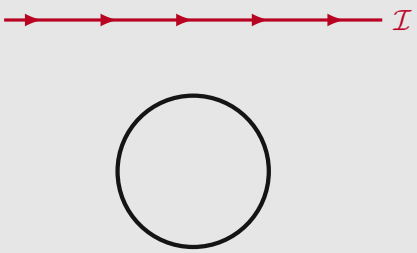


Q4

The current in an infinite solenoid with uniform magnetic field is increasing such that $B = B_0 + kt$. A small circular loop of radius r is placed off-center inside the solenoid.

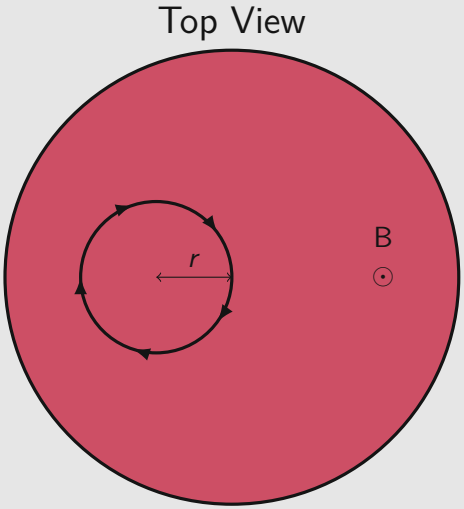
What is the emf around the small loop?

A. $k\pi r^2$

B. $-k\pi r^2$

C. 0

D. Non-zero but need more info



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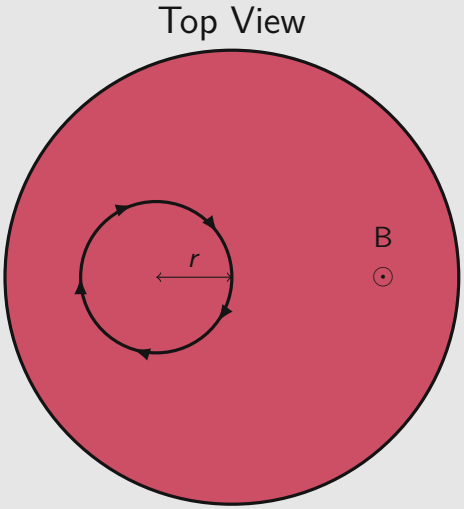
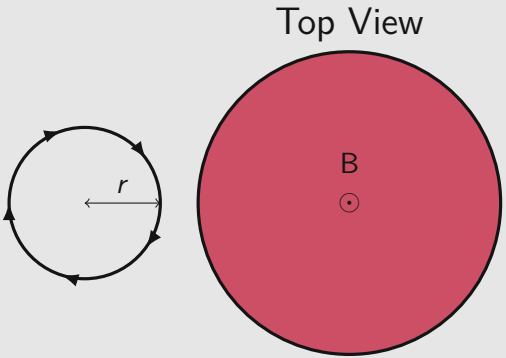


Q5



The current in an infinite solenoid with uniform magnetic field is increasing such that $B = B_0 + kt$. A small circular loop of radius r is placed outside the solenoid.. What is the emf around the small loop?

A. $k\pi r^2$
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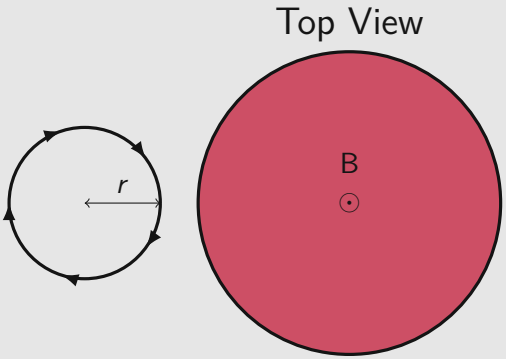
Q5



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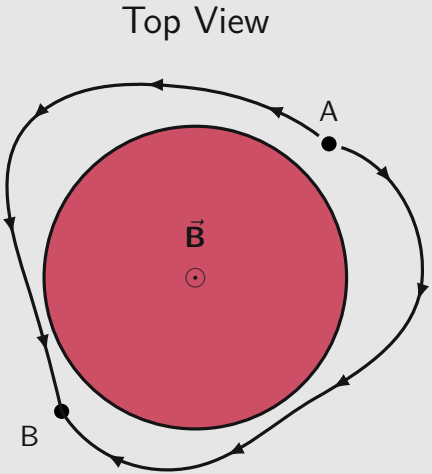
Q6

The current in an infinite solenoid with uniform magnetic field is increasing such that $B = B_0 + kt$. If you calculate the potential between points A and B along two different paths, do you get the same answer?

A. Yes
B. No
C. Can't tell with current info
D. Only at certain times



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Top View