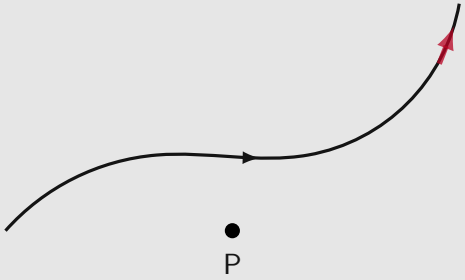
Announcements

- Homework 8 is due tonight!
- Grade reports posted to WISE dropbox!
  - If we had agreements about giving back some early late days, those have not been factored in yet.
- Read at least part of 5.4 for Wednesday

Q1

What do you expect for the direction of $\vec{\mathbf{B}}$ at point P? How about the direction of $d\vec{\mathbf{B}}$ at point P generated **only** by the segment of current $d\vec{\ell}$ in red?



A. $\vec{\mathbf{B}}$ in the plane of the page, $d\vec{\mathbf{B}}$ in plane of page
B. $\vec{\mathbf{B}}$ into page, $d\vec{\mathbf{B}}$ into page
C. $\vec{\mathbf{B}}$ into page, $d\vec{\mathbf{B}}$ out of page
D. $\vec{\mathbf{B}}$ out of page, $d\vec{\mathbf{B}}$ out of page

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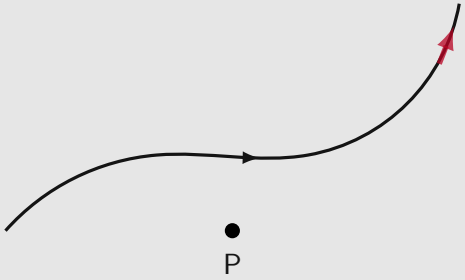

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Q2

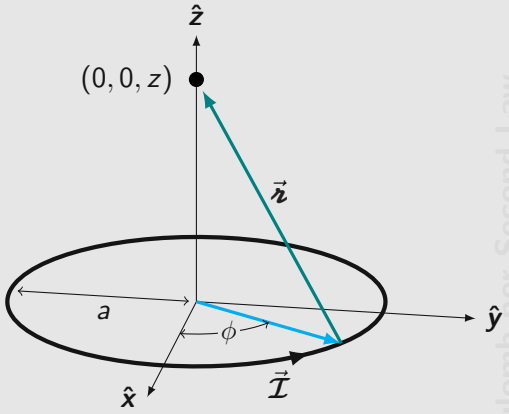
What is the magnitude of $\dfrac{d\vec{\ell} \times \hat{\boldsymbol{r}}}{r^2}$?

A. $\dfrac{d\ell \sin\phi}{z^2}$

B. $\dfrac{a\, d\ell}{z^2}$

C. $\dfrac{d\ell \sin\phi}{z^2 + a^2}$

D. $\dfrac{d\ell}{z^2 + a^2}$



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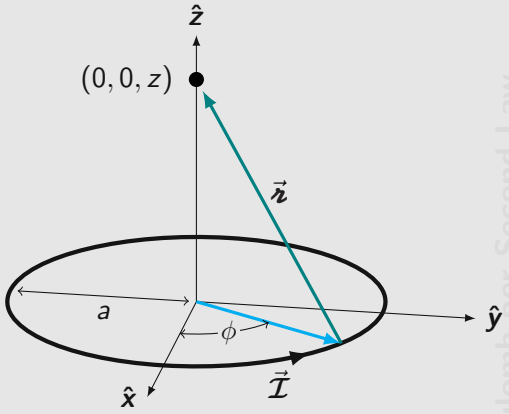
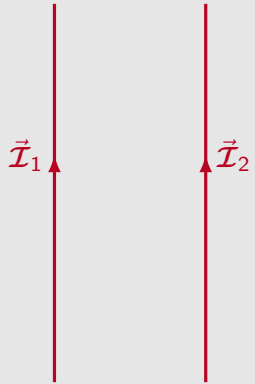


Q3

Say you have two very long, parallel wires each carrying a current $\vec{\mathcal{I}}_1$ and $\vec{\mathcal{I}}_2$, respectively. In which direction is the force on the wire with current $\vec{\mathcal{I}}_2$?

A. Up
B. Left
C. Right
D. Out of the page



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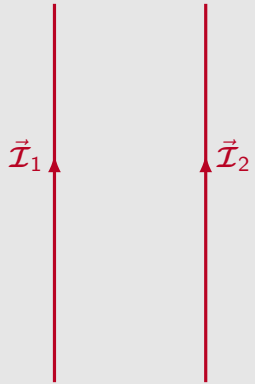
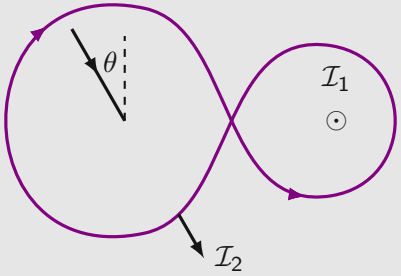


Q4

What is $\oint \vec{\mathbf{B}} \cdot d\vec{\ell}$ around this purple Amperian loop?



A. $\mu_0(\mathcal{I}_2 + \mathcal{I}_1)$
B. $\mu_0(\mathcal{I}_2 - \mathcal{I}_1)$
C. $\mu_0(\mathcal{I}_2 \sin\theta + \mathcal{I}_1)$
D. $\mu_0(\mathcal{I}_2 \sin\theta - \mathcal{I}_1)$

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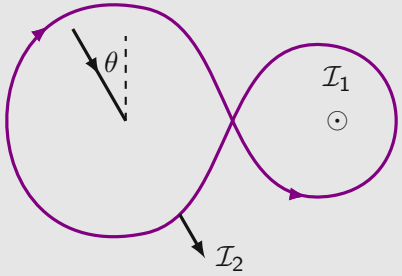

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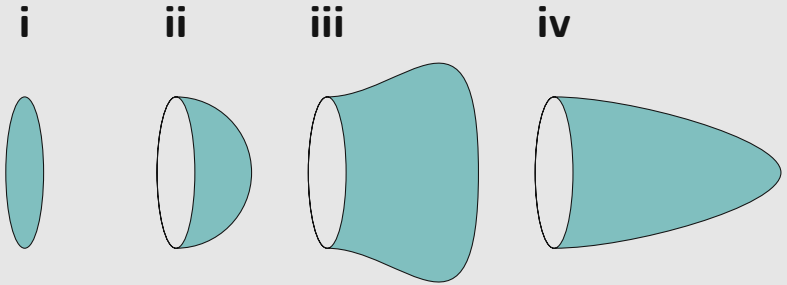
C. $\mu_0(\mathcal{I}_2 \sin\theta + \mathcal{I}_1)$
D. $\mu_0(\mathcal{I}_2 \sin\theta - \mathcal{I}_1)$

Q5

Rank order $\int \vec{\mathbf{J}} \cdot d\vec{\mathbf{A}}$ over the blue surfaces where $\vec{\mathbf{J}}$ is uniform and traveling left to right.



A. $iii > iv > ii > i$
B. $iii > i > ii > iv$
C. $i > ii > iii > iv$
D. Something else

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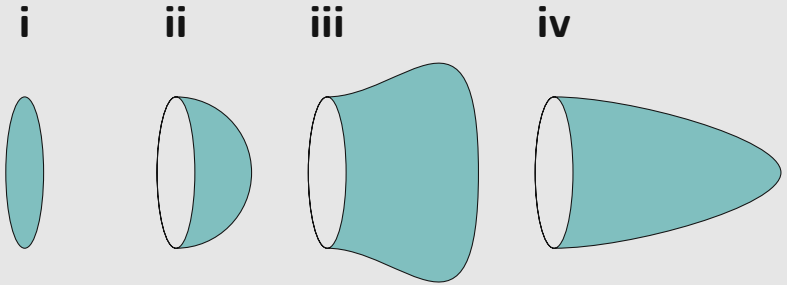

A. *iii* > *iv* > *ii* > *i*
B. *iii* > *i* > *ii* > *iv*
C. *i* > *ii* > *iii* > *iv*
D. Something else