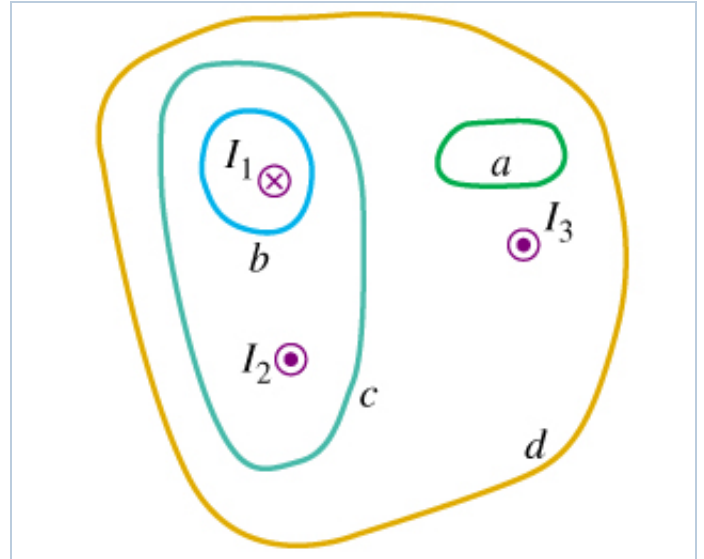


HW due 6/27**Due: 7:00am on Monday, June 27, 2016**To understand how points are awarded, read the [Grading Policy](#) for this assignment.**Exercise 28.40**

The figure shows, in cross section, several conductors that carry currents through the plane of the figure. The currents have the magnitudes $I_1 = 4.2 \text{ A}$, $I_2 = 6.4 \text{ A}$, and $I_3 = 2.3 \text{ A}$, and the directions shown. Four paths, labeled *a* through *d*, are shown.

**Part A**

What is the line integral $\oint \vec{B} \cdot d\vec{l}$ for the path *a*? The integral involves going around the path in the counterclockwise direction.

Express your answer using two significant figures.

ANSWER:

Correct

Part B

What is the line integral $\oint \vec{B} \cdot d\vec{l}$ for the path *b*? The integral involves going around the path in the counterclockwise direction.

Express your answer using two significant figures.

ANSWER:

$$-5.3 \times 10^{-6} \text{ T} \cdot \text{m}$$

All attempts used; correct answer displayed

Part C

What is the line integral $\oint \vec{B} \cdot d\vec{l}$ for the path c ? The integral involves going around the path in the counterclockwise direction.

Express your answer using two significant figures.

ANSWER:

$$2.8 \times 10^{-6} \text{ T} \cdot \text{m}$$

All attempts used; correct answer displayed

Part D

What is the line integral $\oint \vec{B} \cdot d\vec{l}$ for the path d ? The integral involves going around the path in the counterclockwise direction.

Express your answer using two significant figures.

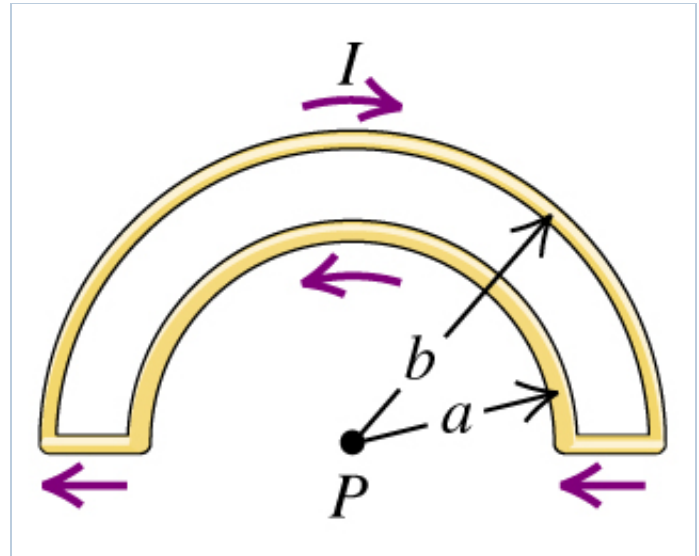
ANSWER:

$$5.7 \times 10^{-6} \text{ T} \cdot \text{m}$$

Correct

Problem 28.66

The wire semicircles shown in the figure have radii a and b .



Part A

Calculate the magnitude of the net magnetic field that the current in the wires produces at point P .

Express your answer in terms of the given quantities and appropriate constants.

ANSWER:

$$\frac{\mu_0 I}{4a} \left(1 - \frac{a}{b} \right)$$

Correct

Part B

Find the direction of the net magnetic field that the current in the wires produces at point P .

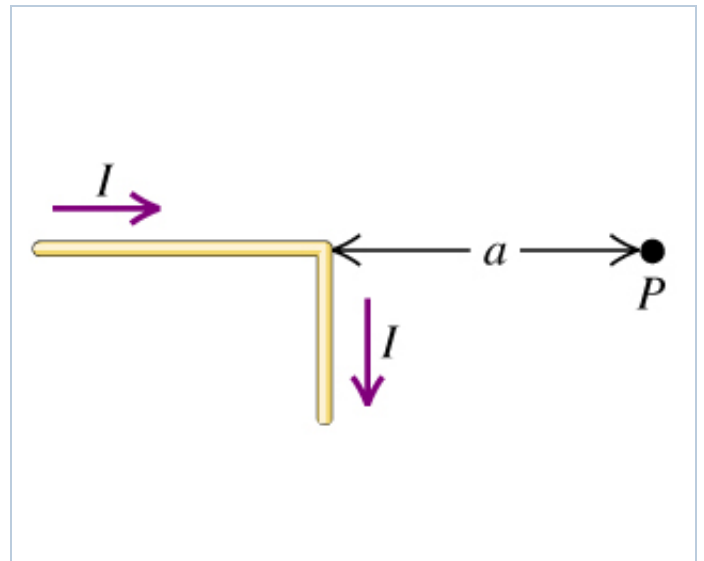
ANSWER:

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☐ into the page

Correct

Problem 28.70

The wire shown in the figure is infinitely long and carries a current I .



Part A

Calculate the magnitude of the magnetic field that this current produces at point P .

Express your answer in terms of the variables I , a , and appropriate constants.

ANSWER:

$$B = \mu_0 \frac{I}{4\pi a}$$

Correct

Part B

Find the direction of the magnetic field that this current produces at point P .

ANSWER:

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Correct

Score Summary:

Your score on this assignment is 83.3%.

You received 12.5 out of a possible total of 15 points.