

PHYSICS 24 SECTION

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FILL IN THE BLANKS:

$$\oint_S \vec{E} \cdot d\vec{a} = 4\pi \int_V \rho dV$$

is the integral form of _____ Law.

A version of the fundamental theorem of calculus called the Divergence Theorem

tells us that $\oint_S \vec{E} \cdot d\vec{a} =$ _____, leading

us to the differential version of Gauss's Law:



$$=$$

is the integral form of Ampere's Law.

A version of the fundamental theorem of calculus called _____

tells us that $\int_C \vec{B} \cdot d\vec{l} = \int_A (\vec{\nabla} \times \vec{B}) \cdot d\vec{a}$,

leading us to the differential

version of Ampere's Law:



PURCELL 6.4, sort of.

(center of semicircle)

Find \vec{B} at the point shown in the diagram.

a) using previous results, superposition, and no integrals.

b) using the Biot-Savart Law and directly integrating.

