PHYSICS II

Assoc.Prof. Yeşim MOĞULKOÇ

Problems

- *Problems are used from;*

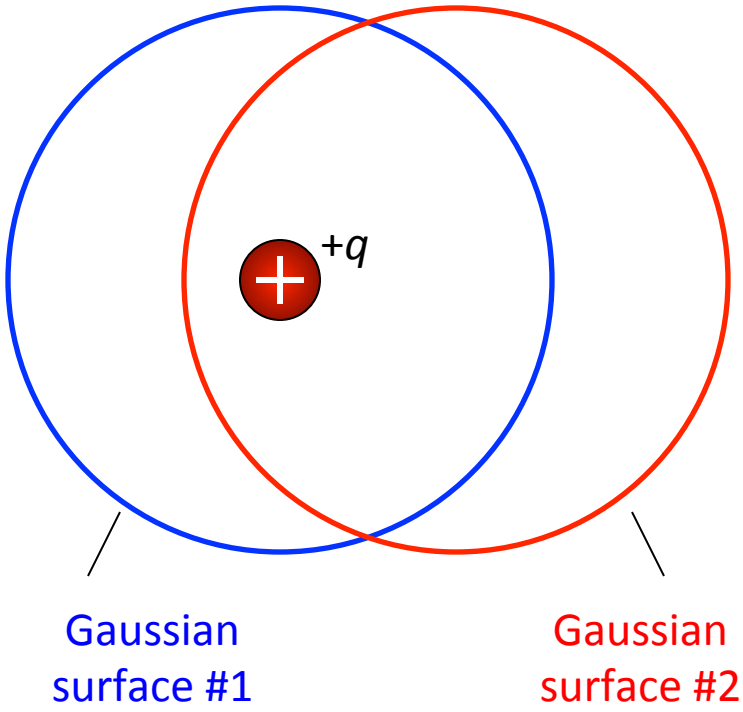
University Physics, Twelfth Edition

Hugh D. Young and Roger A. Freedman

Q22.1

A spherical Gaussian surface (#1) encloses and is centered on a point charge $+q$. A second spherical Gaussian surface (#2) of the same size also encloses the charge but is not centered on it.

Compared to the electric flux through surface #1, the flux through surface #2 is



A. greater. B. the same.

C. less, but not zero. D. zero.

E. not enough information given to decide

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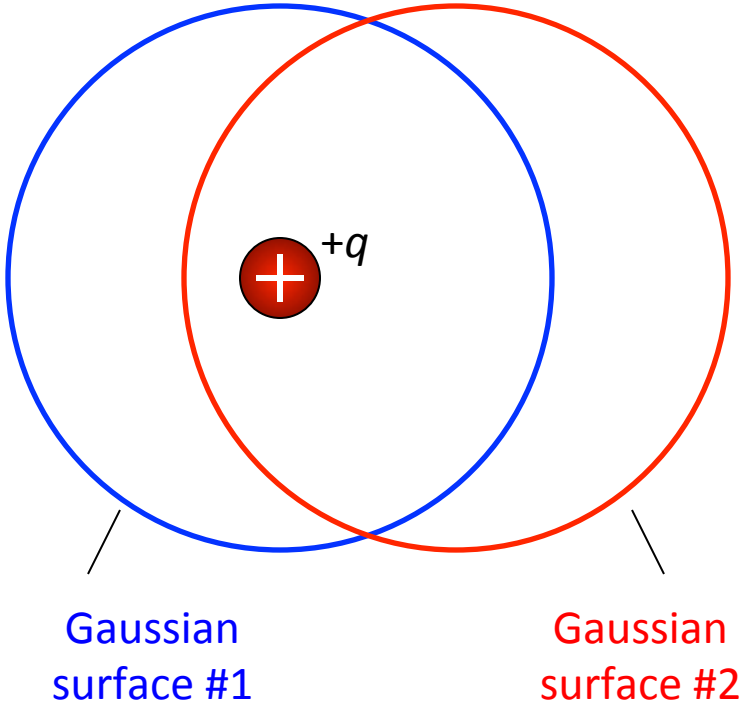

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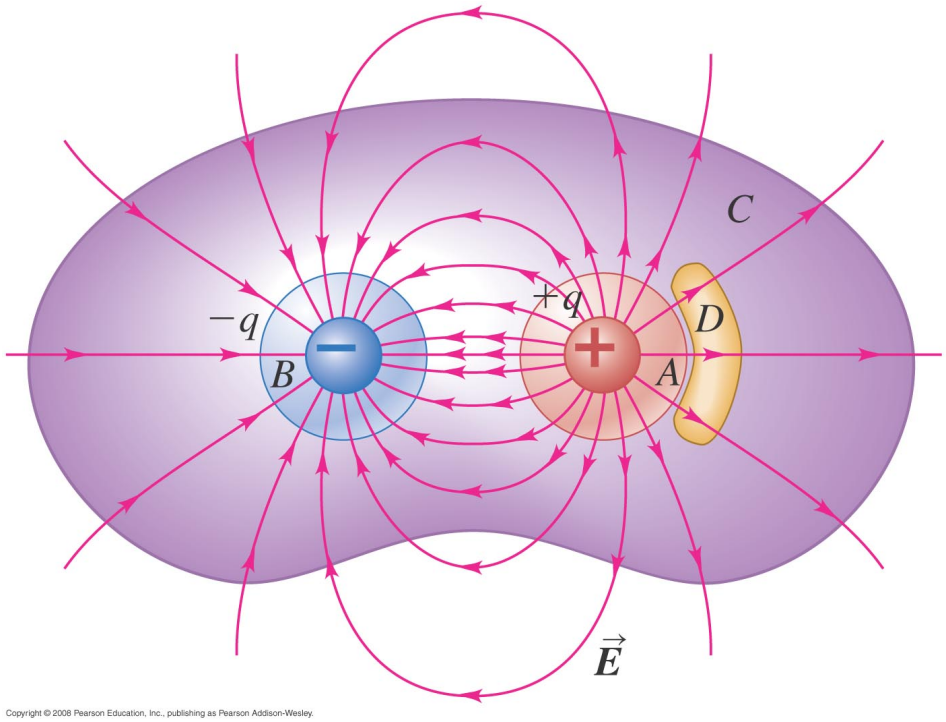
Q22.2

Two point charges, +*q* (in red) and –*q* (in blue), are arranged as shown.

Through which closed surface(s) is the net electric flux equal to zero?



A. surface *A*

B. surface *B*

C. surface *C*

D. surface *D*

E. both surface *C* and surface *D*

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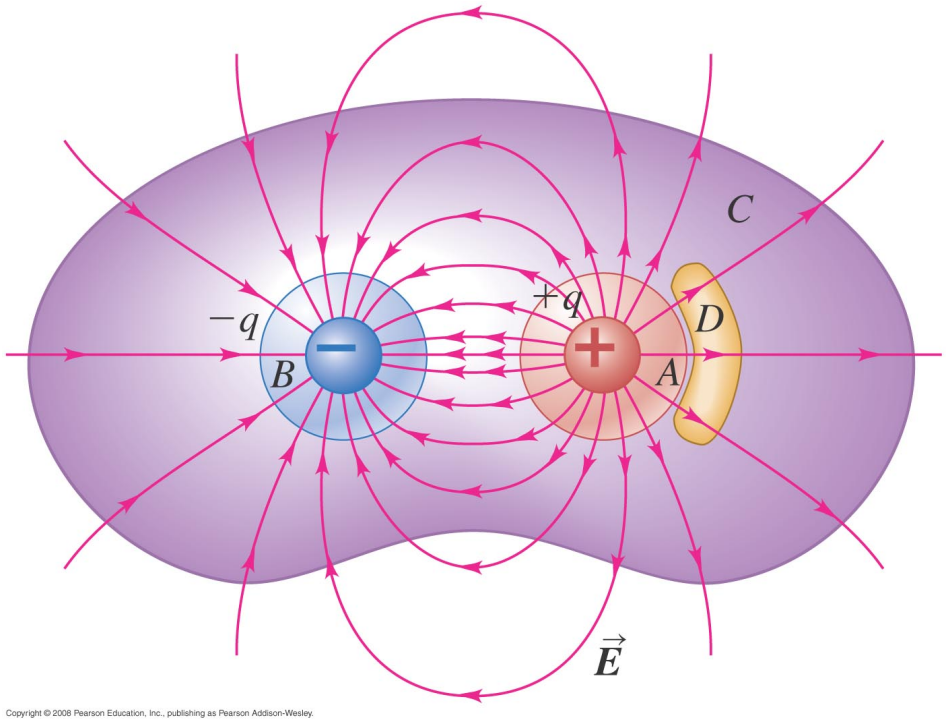

A. surface *A*

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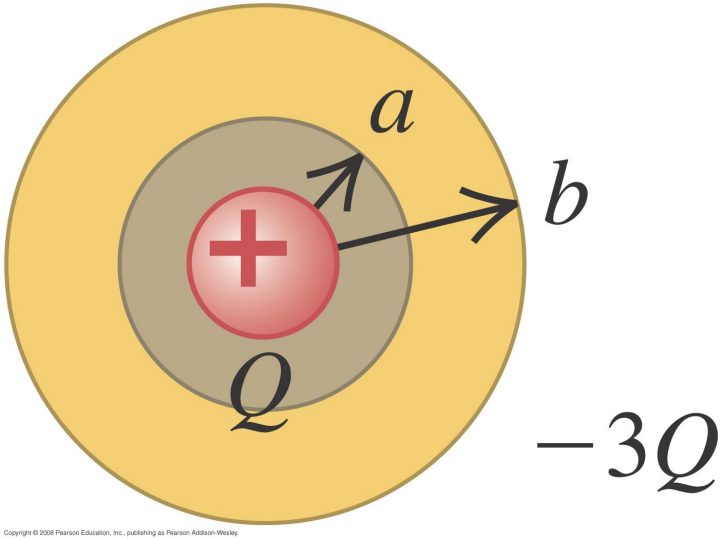
Q22.3

A conducting spherical shell with inner radius a and outer radius b has a positive point charge Q located at its center. The total charge on the shell is $-3Q$, and it is insulated from its surroundings. In the region $a < r < b$,



A. the electric field points radially outward.

B. the electric field points radially inward.

C. is zero.

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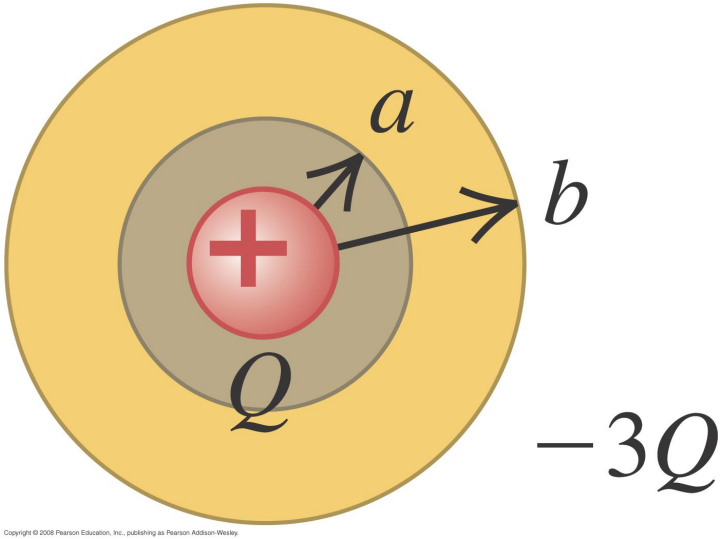

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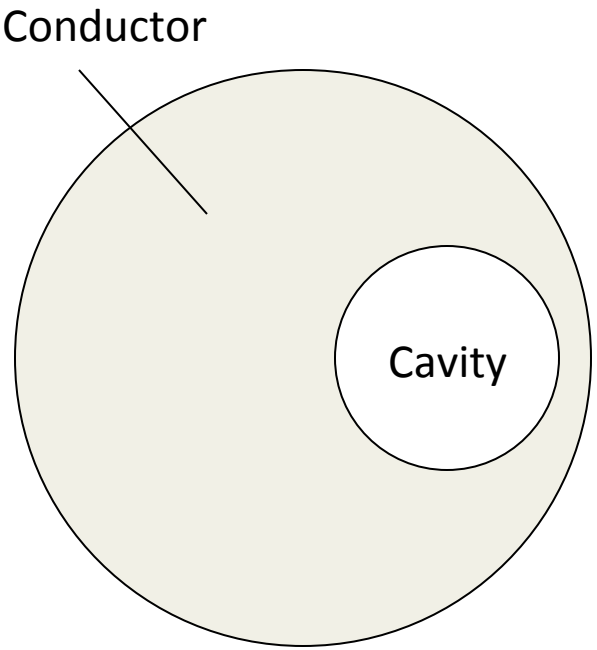
Q22.4



A solid spherical conductor has a spherical cavity in its interior. The cavity is *not* centered on the center of the conductor.

If a positive charge is placed on the conductor, the electric field in the cavity

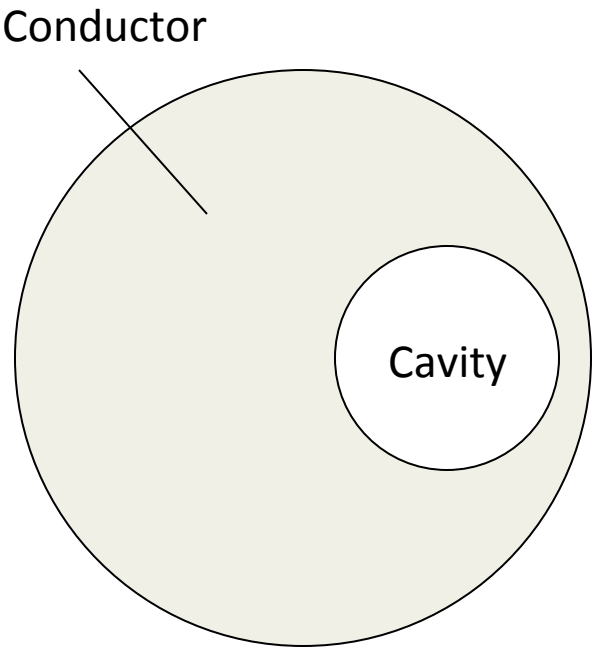
A. points generally toward the outer surface of the conductor.

B. points generally away from the outer surface of the conductor.

C. is zero.

D. not enough information given to decide

A22.4



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C. is zero.

D. not enough information given to decide

Q22.5

There is a negative surface charge density in a certain region on the surface of a solid conductor.

Just beneath the surface of this region, the electric field

A. points outward, toward the surface of the conductor.

B. points inward, away from the surface of the conductor.

C. points parallel to the surface.

D. is zero.

E. not enough information given to decide

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Q22.6

For which of the following charge distributions would Gauss's law *not* be useful for calculating the electric field?

A. a uniformly charged sphere of radius *R*

B. a spherical shell of radius *R* with charge uniformly distributed over its surface

C. a right circular cylinder of radius *R* and height *h* with charge uniformly distributed over its surface

D. an infinitely long circular cylinder of radius *R* with charge uniformly distributed over its surface

E. Gauss's law would be useful for finding the electric field in all of these cases.

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