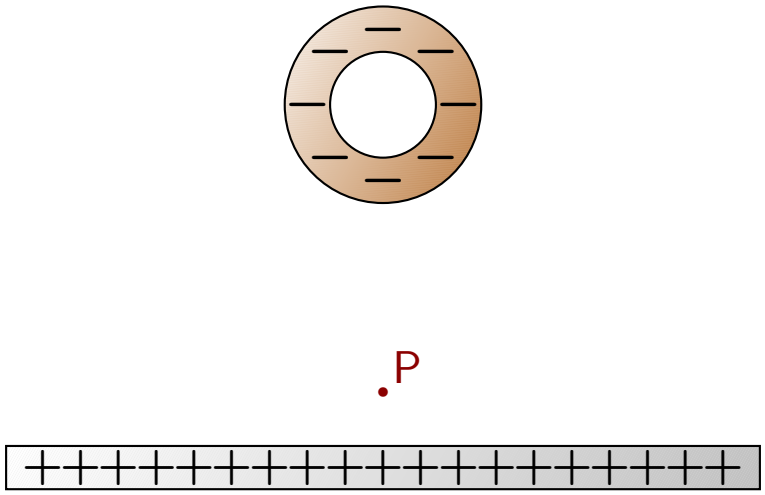
Question 1

A positively charged plate is placed near a negatively charged ring. The plate and ring are held fixed as illustrated and the charges are evenly distributed on each.



Which of the following best represents the direction of the electric field **produced by the ring and the plate** at P?

1. ↑ for positive probe charge ↓ for negative probe charge.
2. ↓ for positive probe charge ↑ for negative probe charge.
3. ↑ for any probe charge.
4. ↓ for any probe charge.
5. Zero field.

Warm Up Question 1

A positive point charge is placed to the right of a negative point charge. What is the direction of the net electric field midway between the two charges? Explain your answer.

1. Left. The positive charge field points away, the negative toward and so they are both in the same direction.
2. Left. The positive is attracted to the negative.
3. No field. Both charges cancel.

Question 2

In the following separate scenarios two source charges produce electric fields. Consider the magnitude of the field at the location midway between the two source charges.

Case A

Case B

Case C

Which of the following describes the rank of the magnitudes of the fields at the midpoint?

1. $E_C > E_A = E_B$
2. $E_A = E_B = E_C$
3. $E_A = E_B > E_C$
4. $E_A > E_B > E_C$
5. $E_C > E_A > E_B$

Warm Up Question 2

A vacuum is a region in which there is absolutely no matter, not even a single electron. Is it possible to establish an electric field in a box, inside which there is a vacuum? Explain your answer.

1. Yes possible. A charge outside the box would produce a field inside.
2. No impossible. Charge is required to produce a field.