**Chapter 27: The Electric Field**

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## 27.4 Calculation of

For a continuous range of charges, the charge at a specific range can be calculated, and the integral be used to find the total resultant electric field.

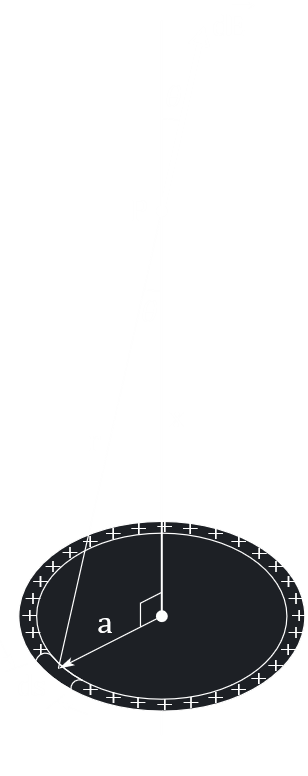
: selected distance

: charge present in the distance

: total charge present

: total distance

Example 5:



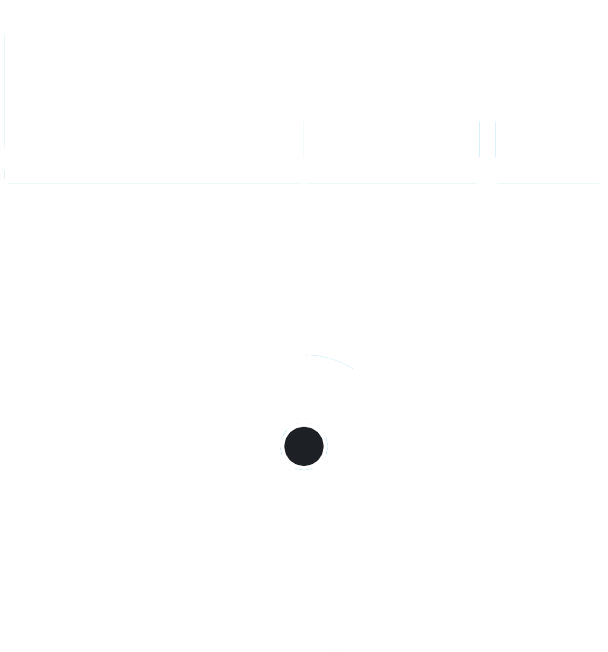
For a ring of charge , radius , at a distance from the center,

where is the electric field due to a length of the ring, that has a charge .

Along the axis,

And for , can be disregarded.

Example 6:



For an infinite line of change density , at a distance above the line,

where is a part of the line.

## 27.5 A Point Charge in an Electric Field

Note that equations for charges can be used with other equations as well.

E.g. acceleration due to electric field,

Over a distance of ,

Kinetic energy,