

USEFUL RESOURCES

The updates, homework assignments, and useful links for APC can be found on SchoolNova's web page:  
[https://schoolnova.org/classinfo?class\\_id=2252&sem\\_id=74](https://schoolnova.org/classinfo?class_id=2252&sem_id=74)

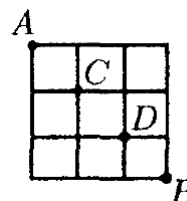
The practical information about the club and contacts can be found on the same web page.

TODAY'S MEETING

Today we solved most of the problems on electric circuits. One remaining problem is reassigned. The next, and final this year, topic is magnetostatics.

REASSIGNED HOMEWORK

1. In the circuit shown in the figure, each side has the same resistance  $r$ . Determine the equivalent resistance a) between points  $A$  and  $B$ ; b) between points  $C$  and  $D$ .



NEW HOMEWORK

1. A rectangular current-carrying loop is placed into a uniform magnetic field  $B$ . Magnetic field is parallel to the plane of the loop. Find the torque acting on the loop and express it in terms of the "magnetic moment" of the loop:  $\mu = IA$  where  $I$  is the current in the loop and  $A$  is the rectangle area.
2. A circular current-carrying loop is placed into magnetic field perpendicular to it. Electric current in the loop is  $I$ . Wire, that the loop is made of, can withstand force  $F$  before breaking. How strong should the magnetic field be in order to break the wire? The radius of the loop is  $R$ . Neglect the action on the loop of current  $I$  itself.
3. Electric current  $I$  is flowing around a circular loop of radius  $R$ . Find the magnetic field at the center of the loop and at a point on the symmetry axis of the loop at distance  $h$  from its center.
4. Find the distribution of magnetic field
  - (a) around an infinite straight wire with current  $I$ ;
  - (b) around an infinite plane with electric current of linear density  $i$ .
5. Find the magnetic field on the symmetry axis of a current-carrying loop with magnetic moment  $\mu$  at a large distance  $h$  away from the loop in the case when the loop is
  - (a) a circle;
  - (b) a square;
  - (c) an equilateral triangle.

FOR THE NEXT MEETING

**IMPORTANT:** The next club's meeting is at 2:40pm, in-person, on Sunday, **May 10**.