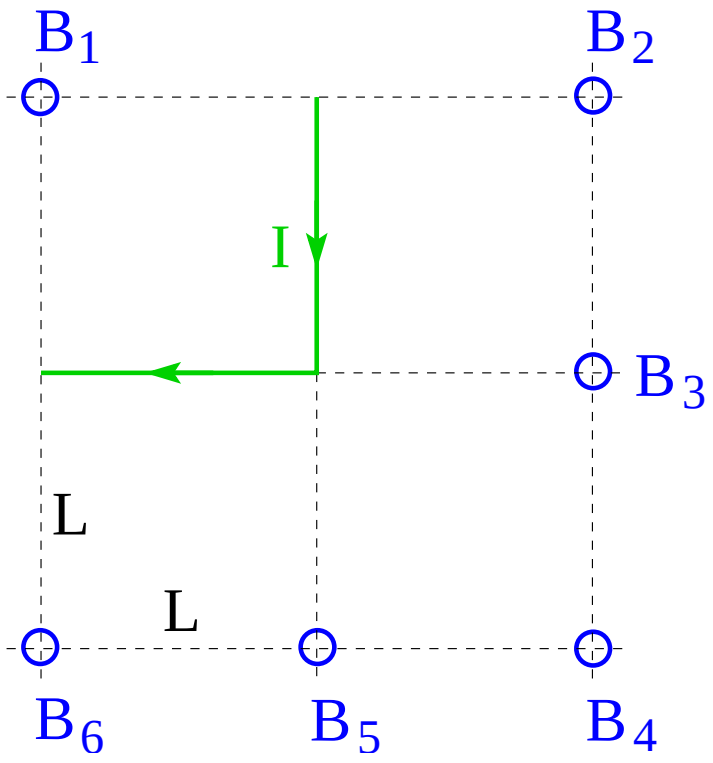
Magnetic Field Application (15)

A current-carrying wire is bent into two straight segments of length L at right angles.

(a) Find the direction ($\odot$, $\otimes$) of the magnetic fields $B_1, \ldots, B_6$.

(b) Name the strongest and the weakest fields among them.

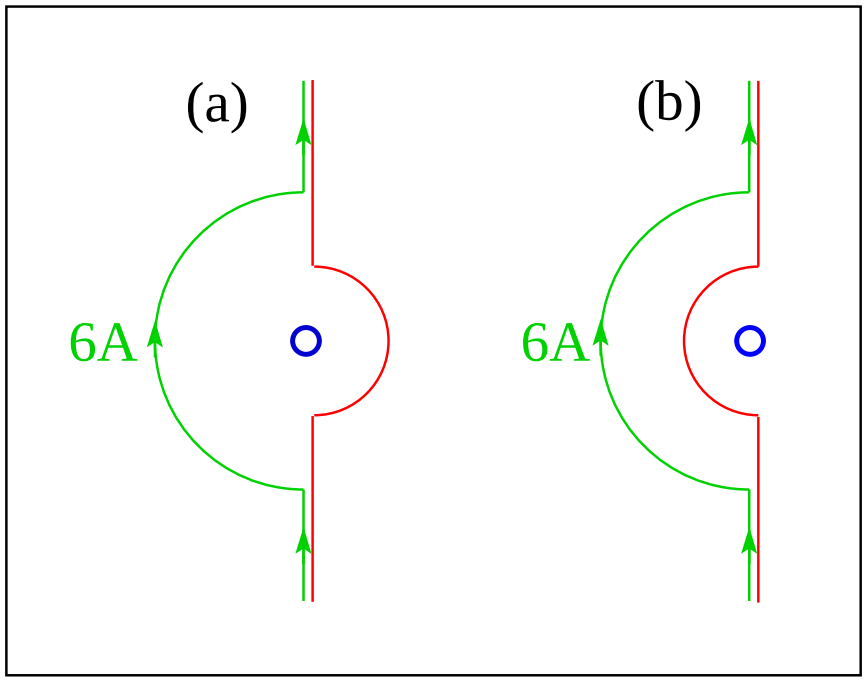
(c) Name all pairs of fields that have equal strength.



Magnetic Field Application (9)

Two wires of infinite length contain concentric semicircular segments of radii 1m and 2m, respectively.

- If one of the wires carries a 6A current in the direction indicated, what must be the direction $(\uparrow, \downarrow)$ and magnitude of the current in the other wire such that the magnetic field at the center of the semicircles vanishes?

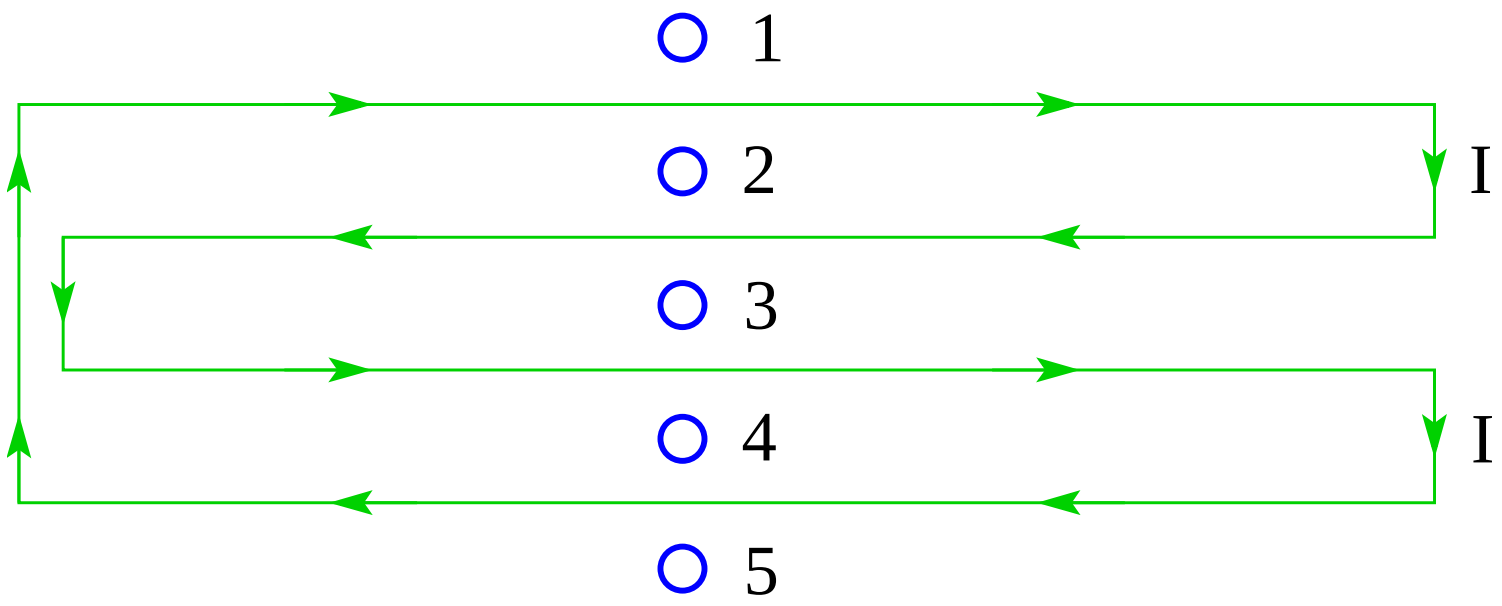


Magnetic Field Application (4)

An electric current I flows through the wire as indicated by arrows.

(a) Find the direction $(\odot, \otimes)$ of the magnetic field generated by the current at the points $1, \ldots, 5$.

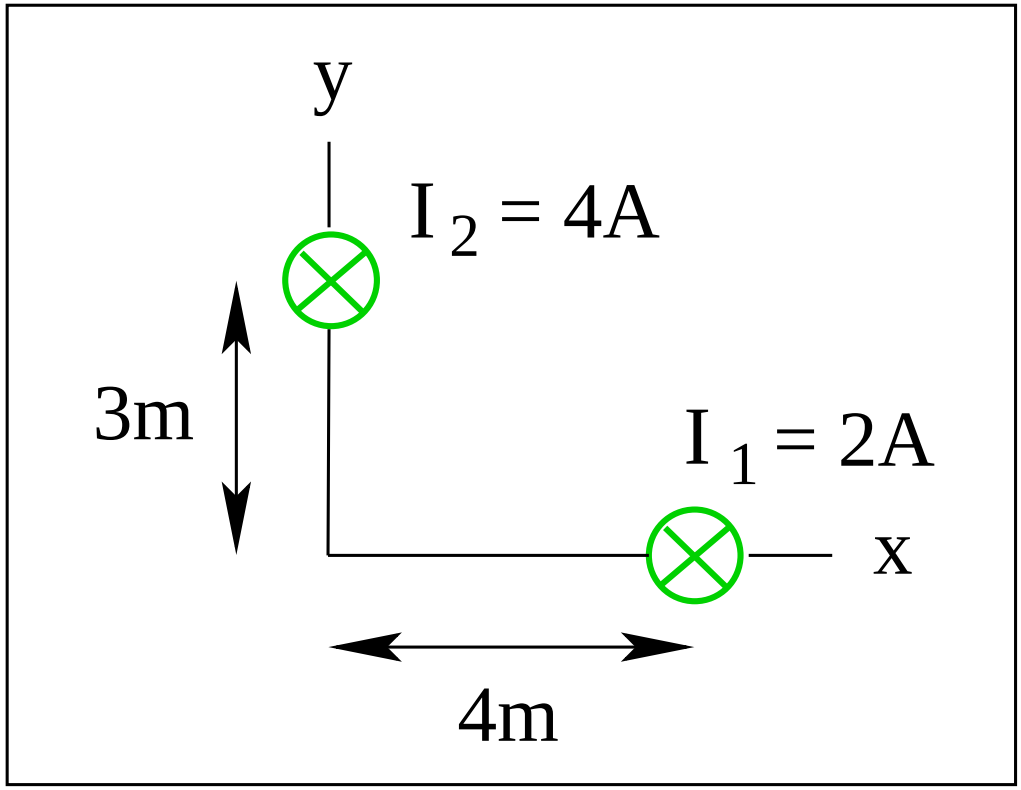
(b) At which points do we observe the strongest and weakest magnetic fields?



Magnetic Field Application (12)

Consider two infinitely long straight currents I_1 and I_2 as shown.

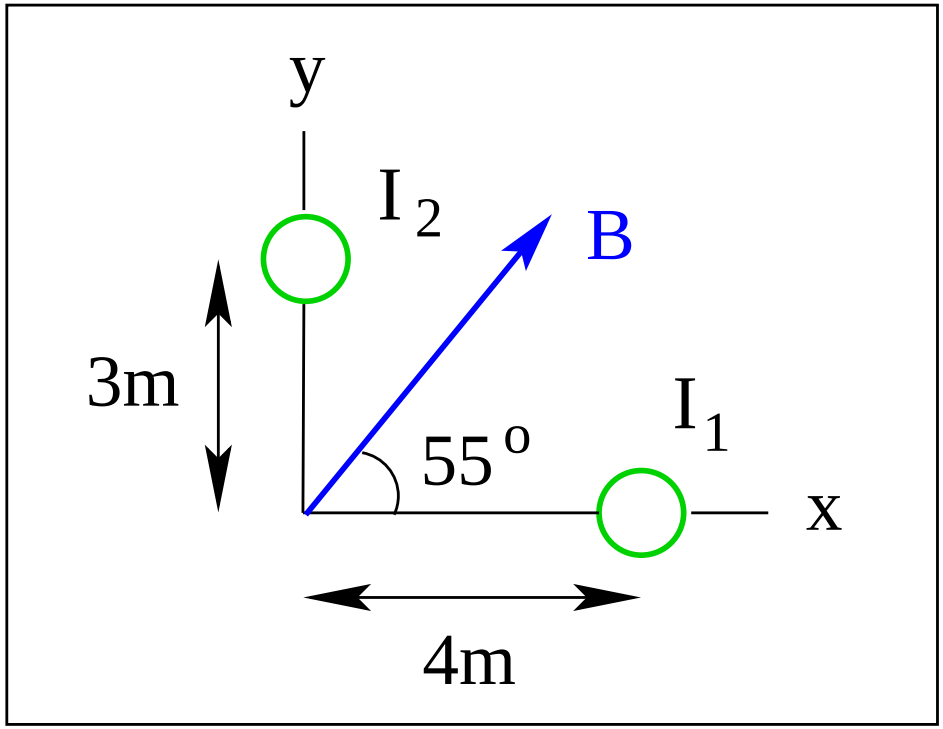
- Find the components B_x and B_y of the magnetic field at the origin of the coordinate system.



Magnetic Field Application (13)

Two straight electric currents I_1 and I_2 of infinite length directed perpendicular to the xy-plane generate a magnetic field of magnitude $B = 6.4 \times 10^{-7}$T in the direction shown.

- Find the magnitude and direction $(\odot, \otimes)$ of each current.



Magnetic Field Application (8)

Three squares with equal clockwise currents are placed in the magnetic field of a straight wire with a current flowing to the right.

- Find the direction (↑, ↓, zero) of the magnetic force acting on each square.