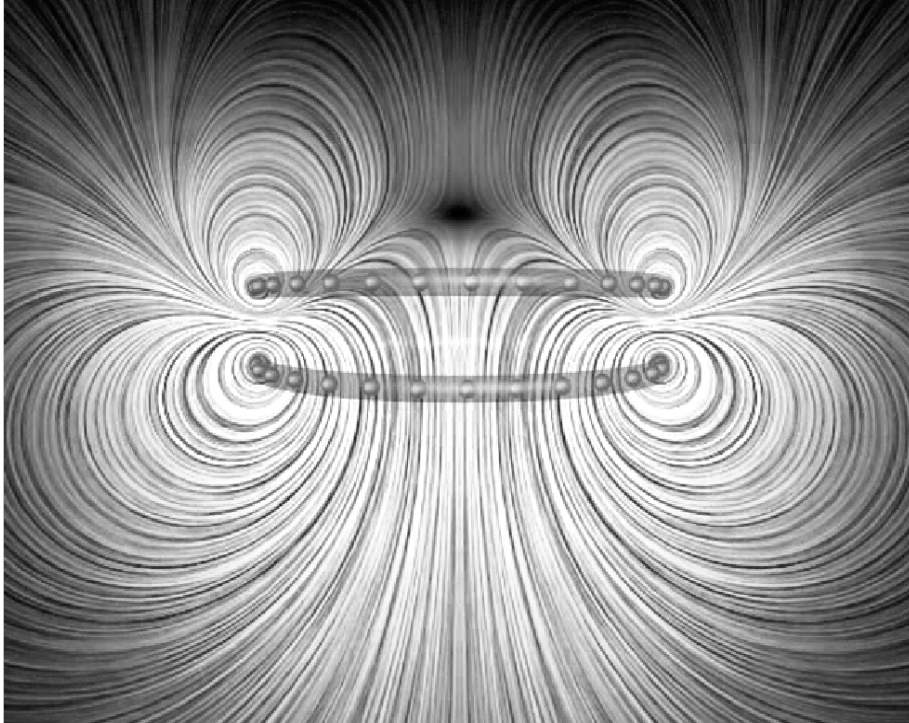Consider field created by two loops of current. Which is true?
1. Currents parallel (top bigger); loops attracted
2. Currents parallel (bottom bigger); loops repelled
4. Currents anti-parallel (top bigger); loops repelled
3. Currents anti-parallel (bottom bigger); loops attracted
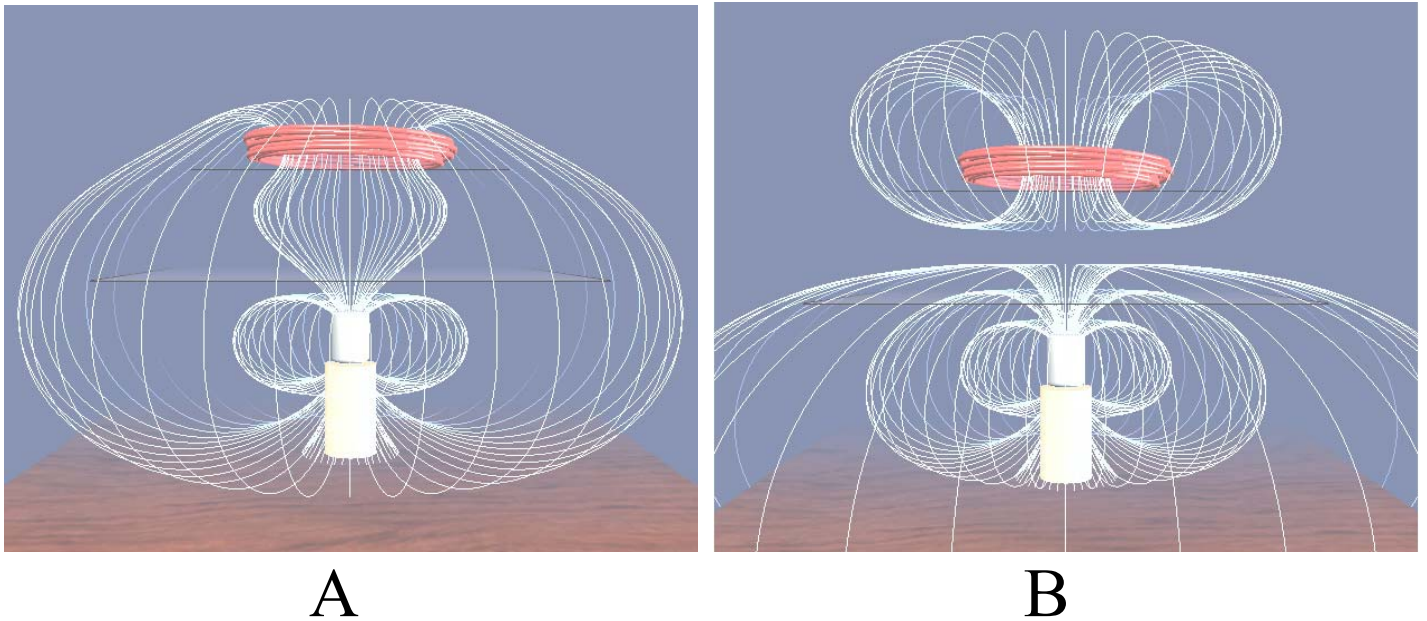5. None of the above

(5) None of the above

Loops repel →
    currents anti-parallel
Field zero above top loop →
    field from bottom stronger →
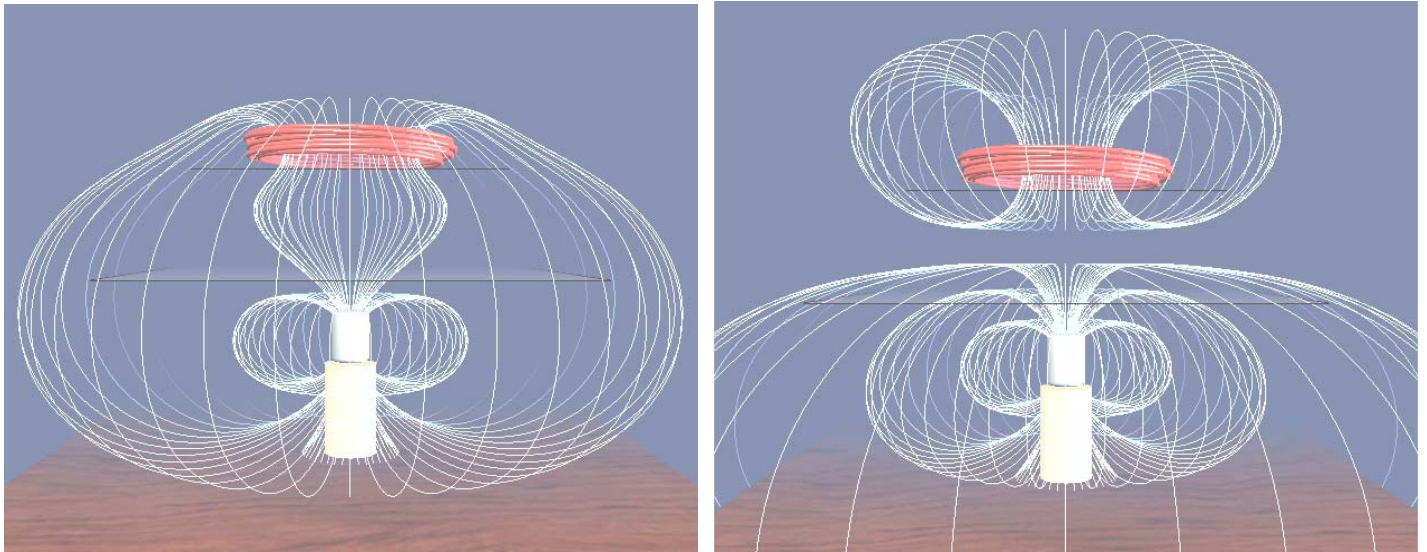   current in bottom loop bigger

So: Currents are anti-parallel (bottom bigger); loops repelled

A   B

Consider current carrying loop above
a permanent magnet. Which is true?
1. (A) loop is repelled from magnet
    (B) loop is attracted to the magnet
2. (A) loop is attracted to the magnet
    (B) loop is repelled from magnet
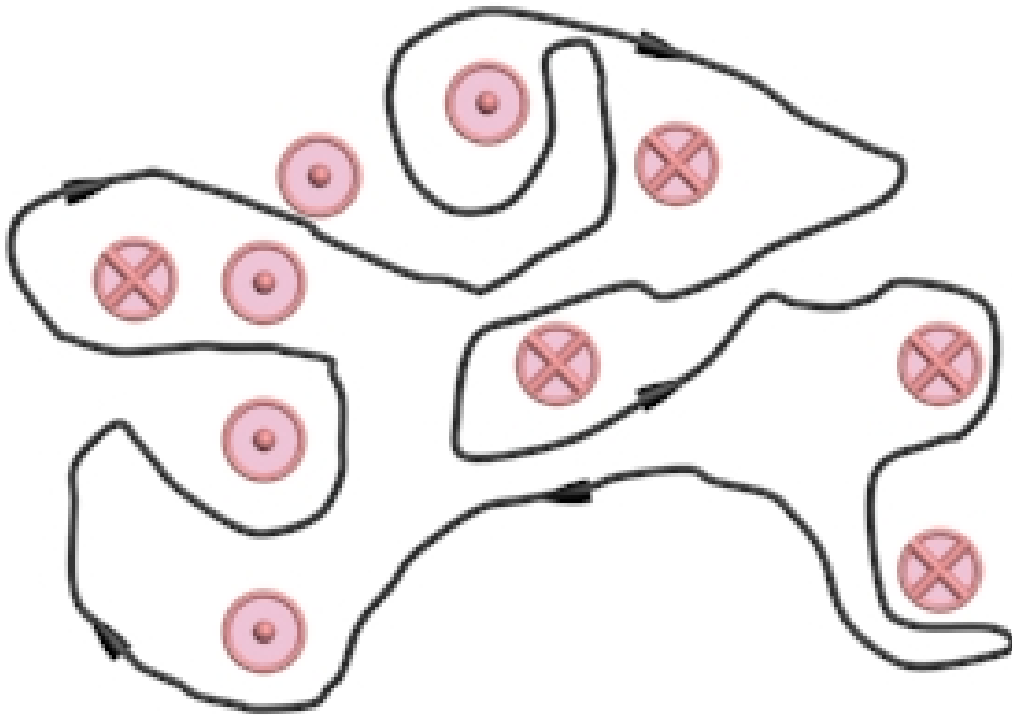3. Need more information
4. Don't know

A   B

(2) (A) loop is attracted to the magnet
    (B) loop is repelled from magnet

Look at field configuration:
(A) Tension in field pulls loop
    down (Dipoles aligned)
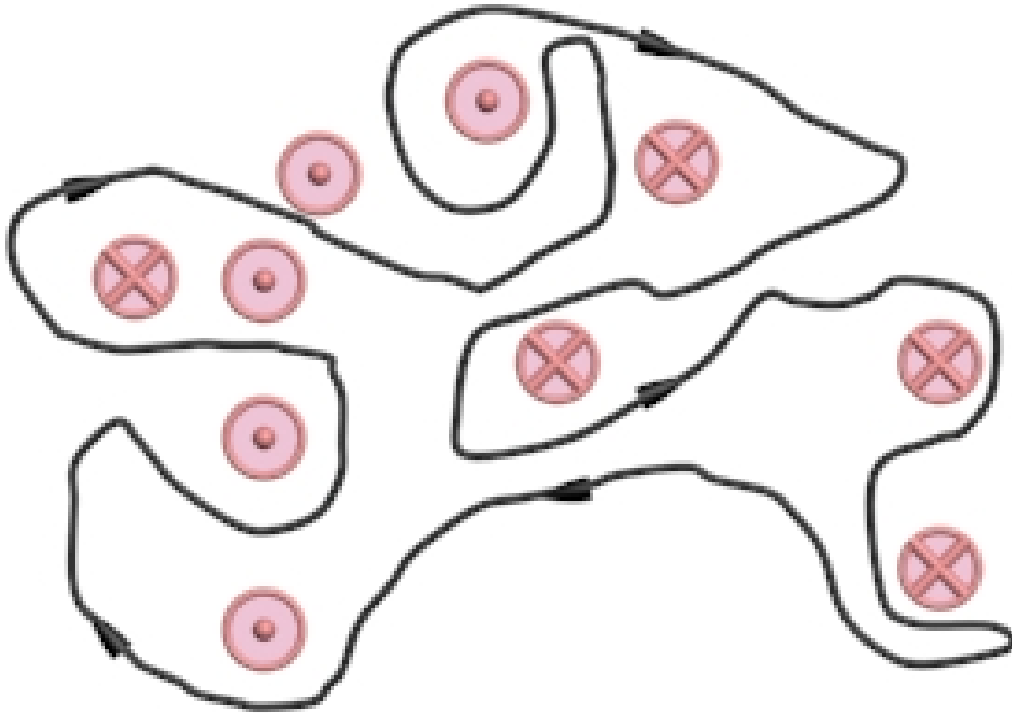(B) Pressure in field pushes loop
    up (Dipoles anti-aligned)

Ampere's Law

Integrating B around the loop
shown gives us
 1. a positive number
 2. a negative number
 3. zero

Ampere's Law

Answer: 3. The total current penetrating the loop is zero (equal amount in and out) so

$$\oint \vec{\mathbf{B}} \cdot d\vec{\mathbf{s}} = \mu_0 I_{enc} = 0$$