Physics Experience

Have you taken a class in Electricity & Magnetism before?

1. **No, never**

2. **Yes, here (8.02)**

3. **Yes, here (8.02 TEAL)**

4. **Yes, other college**

5. **Yes, high school (regular)**

6. **Yes, high school (AP)**

Math Background

What is the *highest* level of mathematics you have credit for? Please choose
only one option below.

1. Credit for 18.01 in any form
2. Halfway through 18.02a
   (finishing this spring)
3. Credit for 18.02 in any form
4. Credit for 18.03 in any form
5. Beyond 18.03

Math Background

Are you familiar with these concepts from vector calculus?

1. I've never seen them before, and I am not so comfortable with math

2. I've never seen them before, but I pick up new math concepts quickly

3. I've seen them before, but definitely need some review

4. I am comfortable with vector calculus
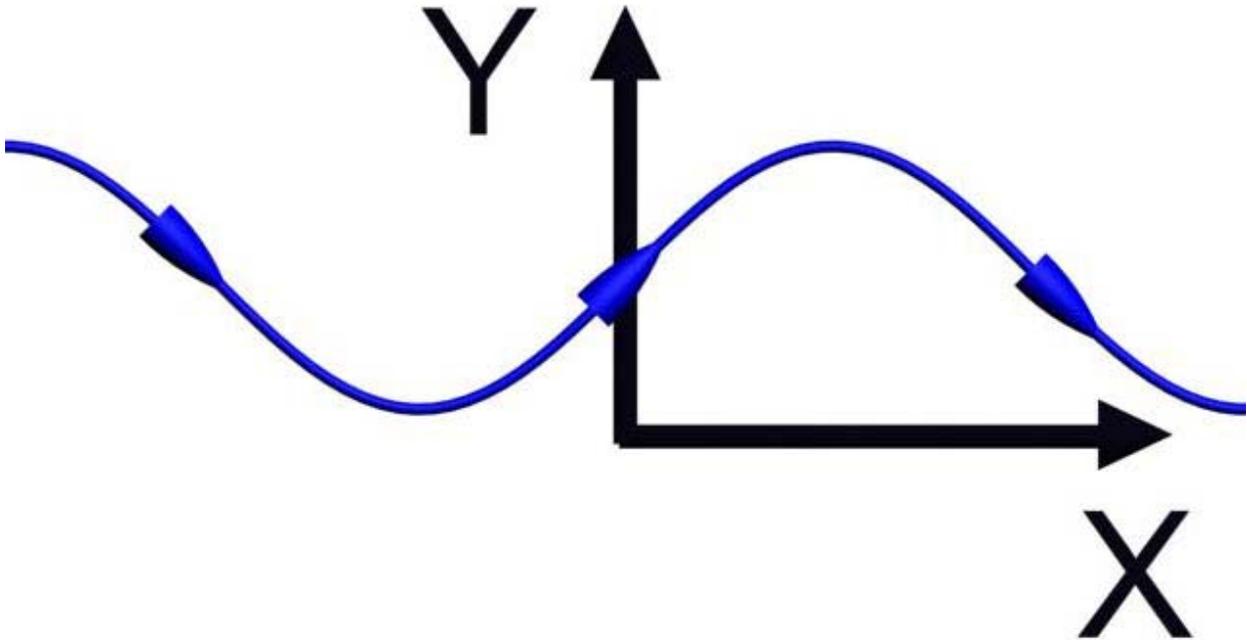
The field line above corresponds to the vector field:

1. $\vec{\mathbf{F}}(x, y) = \sin(x)\,\hat{\mathbf{i}} + \hat{\mathbf{j}}$

2. $\vec{\mathbf{F}}(x, y) = \hat{\mathbf{i}} + \sin(x)\,\hat{\mathbf{j}}$

3. $\vec{\mathbf{F}}(x, y) = \cos(x)\,\hat{\mathbf{i}} + \hat{\mathbf{j}}$

4. $\vec{\mathbf{F}}(x, y) = \hat{\mathbf{i}} + \cos(x)\,\hat{\mathbf{j}}$

5. **I don't know**
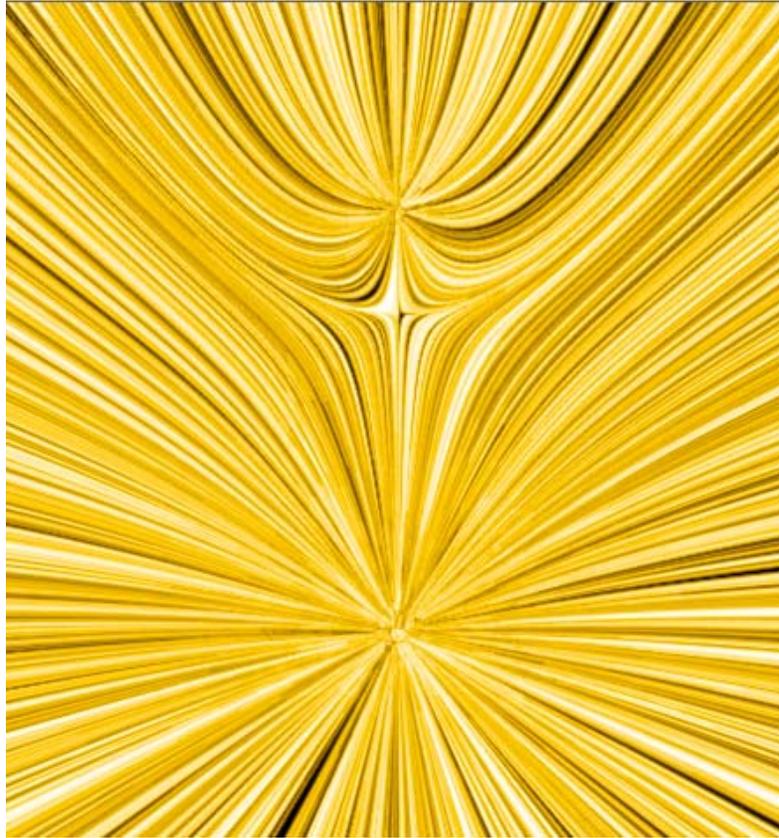
The above vector field is created by:

1. Two sources (equal strength)
2. Two sources (top stronger)
3. Two sources (bottom stronger)
4. Source & Sink (equal strength)
5. Source & Sink (top stronger)
6. Source & Sink (bottom stronger)
7. I don't know

Here there is an initial downward flow.

1. **The point is a source**
2. **The point is a sink**
3. **I don't know**

These two circulations are in:

1. **The same direction (e.g. both clockwise)**
2. **Opposite directions (e.g. one clockwise, one ccw)**
3. **I don't know**
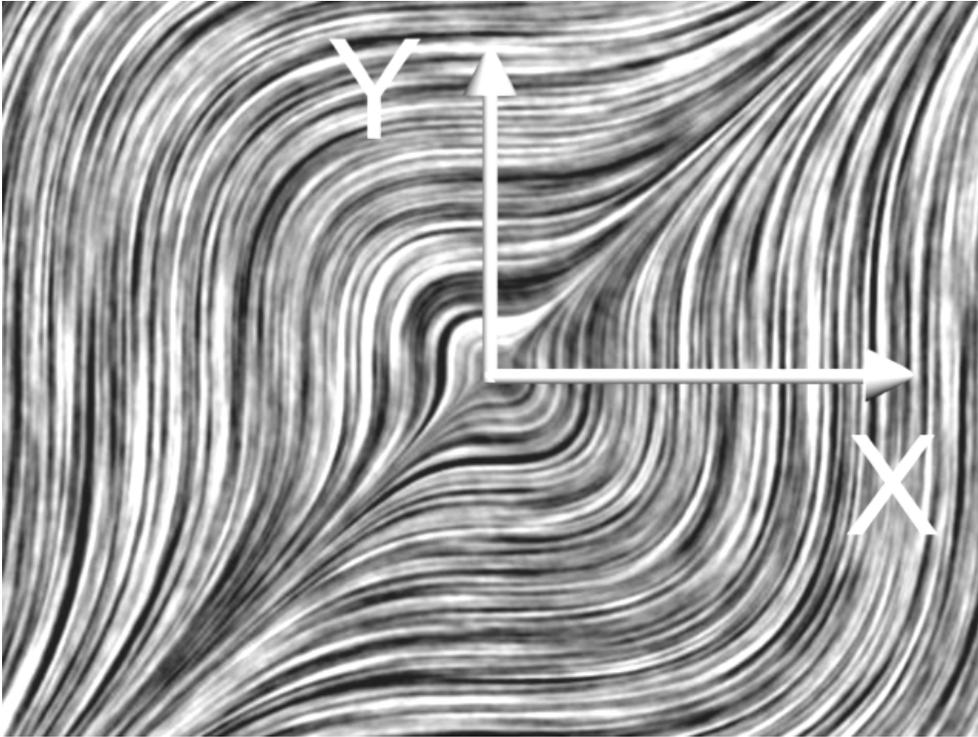
The "grass seeds" field plot above is a representation of the vector field:

1. $\vec{\mathbf{F}}(x, y) = x^2 \hat{\mathbf{i}} + y^2 \hat{\mathbf{j}}$

2. $\vec{\mathbf{F}}(x, y) = y^2 \hat{\mathbf{i}} + x^2 \hat{\mathbf{j}}$

3. $\vec{\mathbf{F}}(x, y) = \sin(x) \hat{\mathbf{i}} + \cos(y) \hat{\mathbf{j}}$

4. $\vec{\mathbf{F}}(x, y) = \cos(x) \hat{\mathbf{i}} + \sin(y) \hat{\mathbf{j}}$

5. NOT SURE

Two opposite charges are placed on a line as shown below. The charge on the right is three times larger than the charge on the left. Other than at infinity, where is the electric field zero?
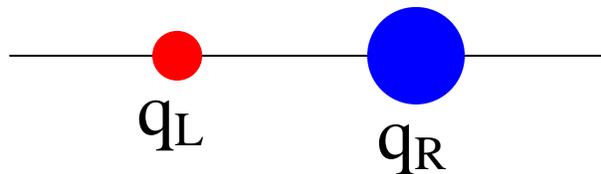
1. Between the two charges
2. To the right of the charge on the right
3. To the left of the charge on the left
4. The electric field is nowhere zero
5. Not enough information – need to know which charge is positive