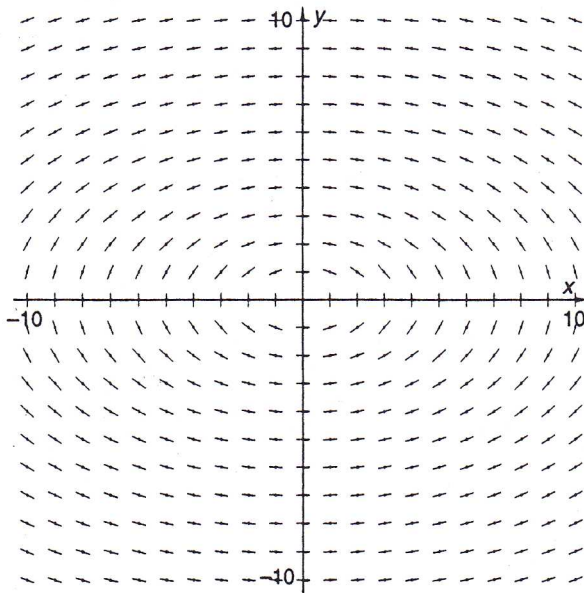


Exploration 44: Introduction to Slope Fields

Objective: Find graphically a particular solution of a given differential equation, and confirm it algebraically.



The diagram above shows the **slope field** for the differential equation

$$\frac{dy}{dx} = -\frac{0.36x}{y}$$

- From the differential equation, find the slope at the points (5, 2) and (-8, 9). Mark these points on the diagram. Tell why the slopes are reasonable.
- Start at the point (0, 6). Draw a graph representing the particular solution of the differential equation which contains that point. The graph should be "parallel" to the slope lines, and be some sort of average of the slopes if it goes between lines. Go both to the right and to the left. Where does the graph seem to go after it touches the x -axis? What geometrical figure does the graph seem to be?
- Start at the point (5, 2) from Problem 1 and draw another particular solution of the differential equation. How is this solution related to the one in Problem 2?
- Solve the differential equation algebraically. Find the particular solution that contains (0, 6). Verify that the graph really *is* the figure you named in Problem 2.
- What did you learn as a result of doing this Exploration that you did not know before?