

Solution Targets

Problem 1

Click on the equation $y' = y^2 - x$. Experiment with the buttons and the cursor control for a few minutes. Notice that the solution curves turn green when they go through the cyan “target.” Then, in order to reset the tool to its original state, close the window and start it up again.

Drop the target $(3,0)$. Step back to $x = 0$, and try to hit it by clicking somewhere on the line $x = 0$ and watching the solution curve through the clicked point. Write $f(x)$ for the solution such that $f(3) = 0$.

(a) Estimate $f(0)$ within 0.01.

Click on some more solution curves. Now press “Set Target” and drop the target at the point on the right edge, $x = 3$, where you think it will be the easiest to hit from far away.

(b) What value y did you pick? For what x 's does the solution through $(x, -3)$ hit the target?

(c) Do these curves actually go through the same point on the right axis?- or do you for sure that the target has some positive diameter? Why?