

1. Choose from among the direction fields below which belongs to each of these ODE (1 point each, no justification needed for this problem):

(a) $y' = y^2 - 3y + 1$. Direction Field #

Autonomous, so the segment slopes can't depend on t . Also there are two roots of $y^2 - 3y + 1$ so equilibrium solutions should be present.

(b) $y' = y^2 + y + 1$. Direction Field #

Autonomous again, but now there are no (real) roots of $y^2 + y + 1$ so no equilibria.

(c) $y' = 1 + (y - t)^2$. Direction Field #

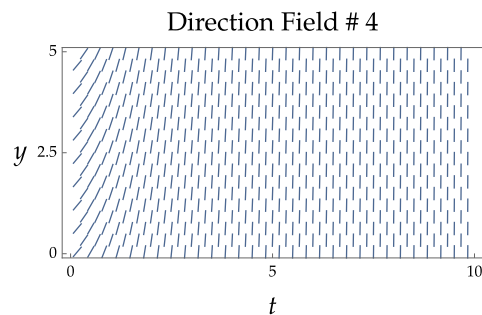
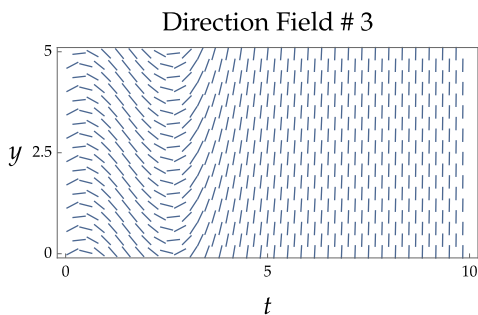
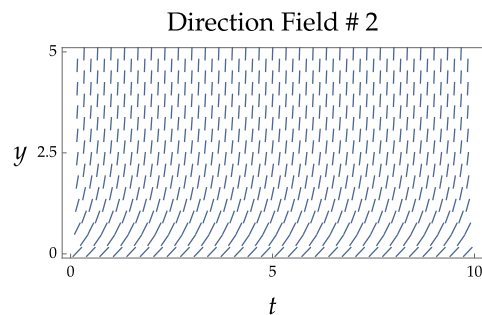
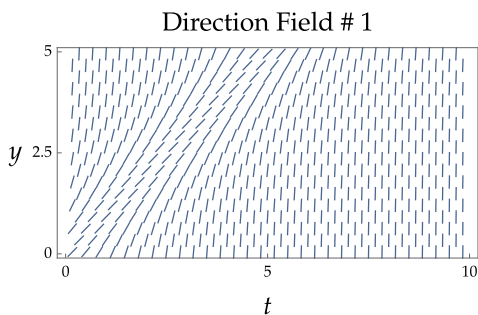
Slope depends on both y and t , but is always ≥ 1 , so no horizontal tangents.

(d) $y' = 1 - (y - t)^2$. Direction Field #

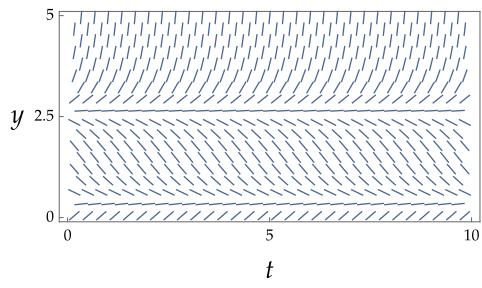
Slope depends on both y and t , but horizontal tangents occur at points where $y = t \pm 1$.

(e) $y' = t^2 - 3t + 1$. Direction Field #

Slope depends on t only; should see horizontal tangents along two vertical lines (roots of $t^2 - 3t + 1$).



Direction Field # 5



Direction Field # 6

