



# Differential Equations

Equations involving derivatives

You can find a general solution (a family of functions)

Or a specific solution, given an initial value.

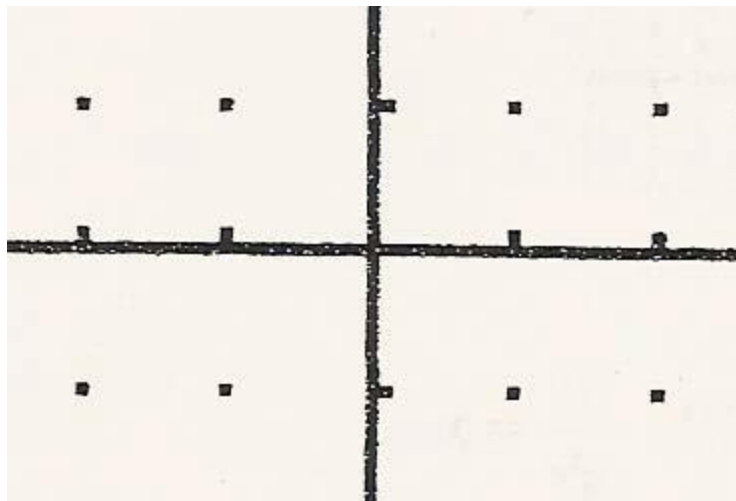
Example:  $\frac{dy}{dx} = 9x^2 - 4x + 5 \quad y(-1) = 0$

Example:  $yy' = 2x$

Example:  $y' = 2x + y$

If you cannot separate the variables, a slope field can be used to see the function.

x	-2	-2	-1	-1	0	0	1	1	2	2
y	-1	1	-1	1	-1	1	-1	1	-1	1
dy/dx										

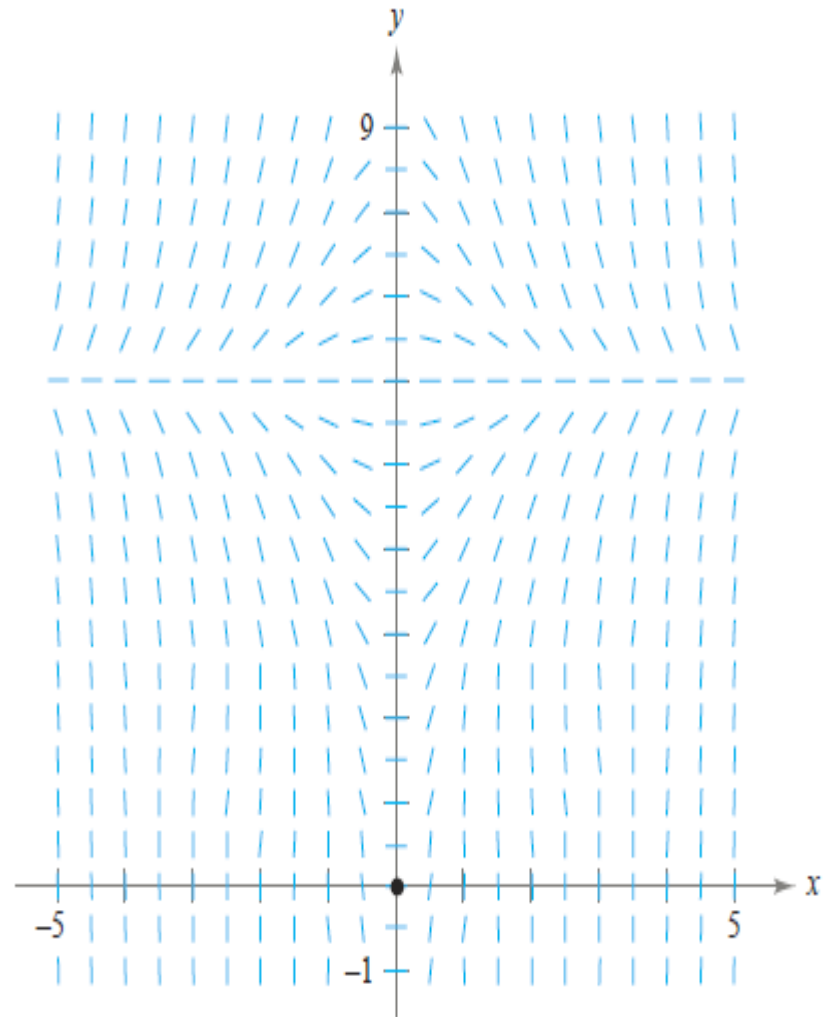


Drawing a slope field by hand is tedious. In practice, slope fields are drawn using a graphing utility. (Remember your calculator program.)

## TRY:

Use integration to find the particular solution. Use a calculator to graph the solution and compare it to the slope field.

$$\frac{dy}{dx} = x(6 - y), (0, 0)$$



# Practice

- Copied p. 378 #55 - 65 odd, 87 - 93 odd