

# W1L4 - INTRO TO SLOPE FIELDS

PROBLEM  $\rightarrow$  Lots of diff eq. can't be solved.

SOLUTION  $\rightarrow$  We can approx solu.

## IDEA

- First Deriv. Represents Slopes
- So,  $dy/dx = f(x,y)$  means we have

A formula to find our slope,  $dy/dx = m$   
at any point  $(x,y)$  by plugging  
into  $f(x,y)$

## PROCESS

- Make a graph w/ WHOLE BUNCH of little lines that rep slopes and points on  $xy$
- Then, given a specific point (initial cond), we can find an approx. curve whose slopes fit.

## EXAMPLE

$$\frac{dy}{dx} = x + y \quad m = x + y$$

"y"

	-4	-3	-2	-1	0	1	2	3	4
-4	-8	-7	-6	-5	-4	-3	-2	-1	0
-3	-7	-6	-5	-4	-3	-2	-1	0	1
-2	-6	-5	-4	-3	-2	-1	0	1	2
-1	-5	-4	-3	-2	-1	0	1	2	3
0	-4	-3	-2	-1	0	1	2	3	4
1	-3	-2	-1	0	1	2	3	4	5
2	-2	-1	0	1	2	3	4	5	6
3	-1	0	1	2	3	4	5	6	7
4	0	1	2	3	4	5	6	7	8

"x"

