

Form(ula) versus Function

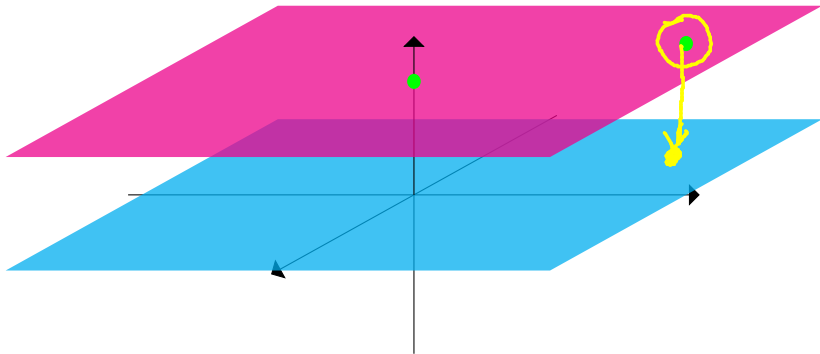
Definition

A function $f: I \rightarrow \mathbb{R}$ is a
rule
assigning a real number to each number in I .

Example

1. $t \mapsto t^2$
2. $t \mapsto \sin(t)$
3. $\theta \mapsto x$ -coordinate of point with angle θ , radius 1

Finding a Plane: the ODE Way



1. Find plane through origin.
2. Find point on plane.
3. Simplify search: look in “obvious” direction.

Rearranging

$$\begin{aligned}y'' + p(x)y' + q(x)y &= r(x) \\cy_1'' + dy_2'' + c'y_1' + d'y_2' & \\+ p(cy_1' + dy_2') & \\+ q(cy_1 + dy_2) &= r \\c(y_1'' + py_1' + qy_1) & \\+ d(y_2'' + py_2' + qy_2) & \\+ c'y_1' + d'y_2' &= r\end{aligned}$$