

Direction Fields -dfield6

- The routine **dfield6** is already loaded on all PUCC machines as standard software. To access it from any PUCC machine:

Start→All Programs→Standard Software→Computational Packages→MATLAB6.1→MATLAB6.1

If you are using your own copy of MATLAB you may need to download **dfield6**. Here is a link :

<http://math.rice.edu/~dfield/>

(Note: **dfield** and **dfield5** are older versions of **dfield6**.)

- To access **dfield6**, at a MATLAB prompt type: **dfield6**
- A popup window will appear:

The differential equation.		
$x' = x^2 \cdot t$		
The independent variable is <input type="text" value="t"/>		
Parameters/expressions: <input type="text"/>	= <input type="text"/>	
<input type="text"/>	= <input type="text"/>	
The display window.		
The minimum value of t = <input type="text" value="-2"/>	The minimum value of x = <input type="text" value="-4"/>	
The maximum value of t = <input type="text" value="10"/>	The maximum value of x = <input type="text" value="4"/>	
Quit	Revert	Proceed

- Correctly enter your differential equation and enter the range of values of the independent and dependent variables. Hit **Proceed** and a graphics window will appear with the direction field of your differential equation. Click the mouse at any point and the corresponding solution curve through that point will be plotted.
- There are several options available in the graphics display window : printing, keyboard input of initial conditions, inserting text, erasing solutions, zoom, etc.
- You may have up to two parameters to quickly vary your differential equation (rather than retyping the whole differential equation with a different constant). For example, if you wanted to see the slope fields for $y' = At + By^2$ for the values $A = 0, 1, 2$ and $B = -0.1, 0.0, 0.1$, you only need to type in one equation and simply vary the parameters A and B in the indicated boxes.