

APPM 2450 Calculus 3 Computer Lab
Lab Exercise 7

Create a Mathematica notebook that does all of the following. Feel free to ask your neighbor or your lab instructor for help if you get stuck. Items with a \Rightarrow are required, items with a \star are optional.

\Rightarrow Get help for the function `Table`

\Rightarrow Use `Table` to make a list of the squares of the first 10 integers.

\Rightarrow Use `Table` to make a list of the squares of the values of the numbers $\{-2, -1.5, -1, -0.5, 0, 0.5, 1, 1.5, 2\}$.

\Rightarrow What does the command

```
Show[Table[Plot[Cos[n*x], {x, 0, 2Pi}, PlotStyle -> Hue[n/5]], {n, 1, 5}]]
```

do? Run it and see.

\Rightarrow Modify the above command to make a plot of $f(x) = \frac{1}{1+x^2}$ and its first 5 derivatives on $x \in [-4, 4]$ (you may have to use the `Evaluate` command. See the Notebook with Tables for an example).

\Rightarrow Type and run the following commands:

```
Manipulate[Plot[(x-t)^2, {x, -6, 6}, PlotRange -> {0, 10}], {t, -4, 4, .1}]
```

```
Manipulate[Plot[a*Sin[x-t], {x, -6, 6}, PlotRange -> {-2, 2}], {t, -4, 4}, {a, 1/2, 2}]
```

\Rightarrow Come up with your own function to animate with `Manipulate`. Note: This will help you with Project 2!!!

\Rightarrow Come up with something interesting that you can do with `Table`, (not necessarily done in class) and implement it.

\Rightarrow Go to 'Cell', then 'Delete All Output'. Save your notebook as *YourLastName_YourFirstName_worksheet7.nb* and email as an attachment to your instructor.