

MATH 1310 Programming Project #3
More on For Loops

You have the whole class period to work on this project with your group. Write your answers on a separate paper. Be sure to answer all questions asked.

1. Enter the following program into your calculator and run it for several inputs.

```
: Prompt  $N$   
:  $1 \rightarrow X$   
: For( $K, 1, N$ )  
:  $X * 2 \rightarrow X$   
: End  
: Disp  $X$ 
```

- (a) Express the output of the program as a function of N .
 - (b) Explain in detail how the For loop is operating. One way to see this might be to add the commands “Disp X ” and “Disp K ” inside the loop. What happens to X and K each time through the loop?
2. Write a program that asks the user for N numbers and displays their average.
 3. Write a program to prompt the user for the initial value P_0 and the continuous exponential growth constant r of an exponential growth function $P(t) = P_0e^{rt}$, then draw the graph of this function. Note: If you input large values for P_0 you may have to zoom out to see your graph well.
 4. Write a program that prompts for the user for N , then plots N different exponential growth functions (without clearing the screen in between). For each equation, the user should input an initial value P_0 and a continuous exponential growth constant r .