home work is explained by

QAMBER ABBAS 6217000198 & SAYED ASAD SHAH 6217000162

Piecewise linear function in MATLAB and measuring the temperature from equation

Piecewise function is a function that is defined on a sequence of intervals. A common example is the absolute value,

$$|x| = \begin{cases} -x & \text{for } x < 0 \\ 0 & \text{for } x = 0 \\ x & \text{for } x > 0. \end{cases}$$

Piecewise functions are implemented in the Wolfram Language as Piecewise[{{*val1*, *cond1*}, {*val2*, *cond2*}, ...}].

Additional piecewise functions include the Heaviside step function, rectangle function, and triangle function.

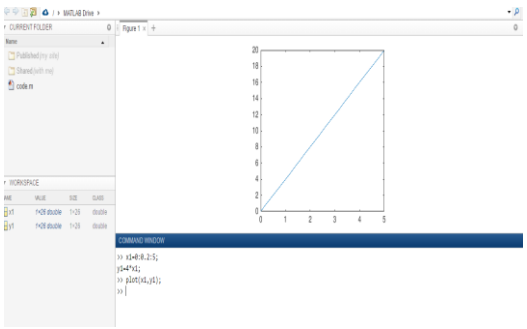
Semicolons and commas are sometimes used at the end of either the left or the right column, with particular usage apparently depending on the author. The words "if" and "for" are sometimes used in the right column, as is "otherwise" for the final (default) case.

For example :

Here is code of the piecewie linear function that we have used in example , here we will discuss the the whole code by parts the the whole code is saved in another file named as code in github

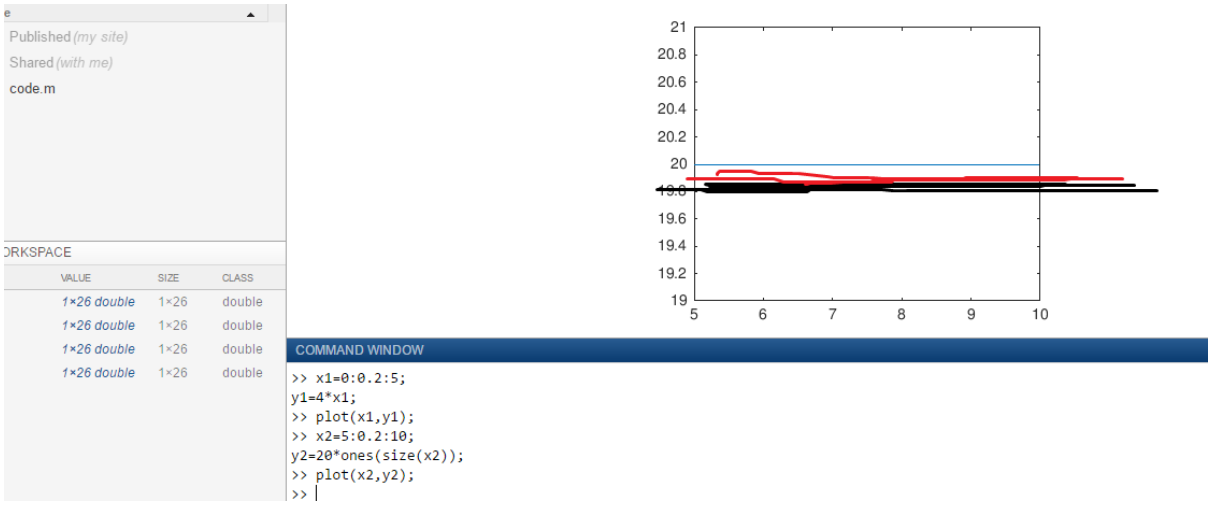
```
x1=0:0.2:5;
y1=4*x1;
plot(x1,y1)
```

Code is also measuring time in which conversion is done. Surprisingly for negative temperature values, it takes around 280us max & for positive temperature it takes around 144us max.

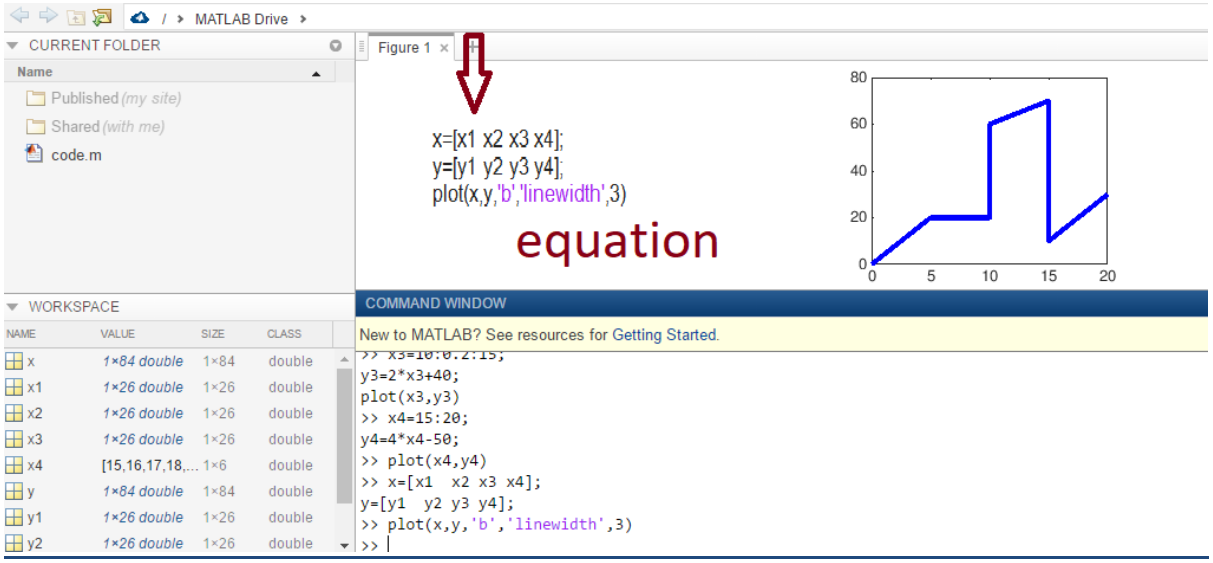


```
x2=5:0.2:10;
y2=20*ones(size(x2));
plot(x2,y2)
```

$$|x| = \begin{cases} -x & \text{for } x < 0 \\ 0 & \text{for } x = 0 \\ x & \text{for } x > 0. \end{cases}$$



Equations with final result



Why piecewise function is useful to meaure equation

A piecewise function is a function that has different parts, or pieces. Each part of the piecewise function has its own specific job that it performs when the conditions are correct.