**MATLAB Variables**

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The first step to solving problems in MATLAB usually requires defining variables.

$$y = f(x) = 3x^2 + 2x - 6$$
$$y_1 = f(1)$$
$$y_2 = f(2)$$

For example, suppose we need to evaluate this expression for different values of x and save the results to use later.

You might guess that we use the equal sign to create a variable and that is exactly right, the = sign is referred to as the assignment operator since it assigns value to the variable. Giving variables descriptive names helps us remember their meaning but there are a few important rules we must follow. Variable names must start with a letter and can contain only letters numbers and underscores, variable names are also case sensitive.

Take a moment and try identifying the valid variable names in this list, we see that both b and d are valid names but a violates rule 1 and c violates rule 2. Now back to that expression we need to evaluate variables are useful because they are stored in memory. So let us create a new variable y1 using the existing variable x. The expression to the right of the assignment operator is evaluated using the current value of x, then the result is assigned to the variable.

Notice that y1 is in memory but the result was not displayed that is because we ended the statement with a semicolon which prevents output from being shown. Now suppose we need to find y when x is equal to pi we could create a variable named pie but to be accurate we need to remember pi too many decimal places, no problem pie is so commonly used that it is already included in MATLAB.

So we don't have to define pie to use it in calculations notice anything different about this last expression we did not use the assignment operator but the result was stored in the variable ans. The name and is used by default to store a result when we do not use the assignment operator. Create a few variables in MATLAB yourself for example, try creating a variable y2 that is the value of the function when x=2.

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