

Solution to the exercises of Session 1

Version 1.0.1

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- **Section 2**

You can use *lookfor* to find `medfilt2`, `std`.

- **Section 3**

17, 148, 10, -4

- **Section 4**

whos

- **Section 5 / 1**

The valid **variable** names are: *century_21st*, *pi* (careful: this is already defined in MATLAB!), *is_THIS_valid*. The following are not valid variable names because they are reserved **keywords**: *for*, *while*. The following are just **invalid**: *21st_century*, *hello world*.

- **Section 5 / 2**

ans: most recent answer; *eps*: spacing of floating point numbers (~ data type/machine floating point precision); *i* and *j*: imaginary unit; *Inf*: arithmetic representation for positive infinity; *NaN*: arithmetic representation for Not-a-Number, i.e. the solution of $0/0$; *pi* = 3.1415926535897...

- **Section 7 / 1**

The function *sin* takes an argument in radians: $\sin(45/180 * \pi)$

- **Section 7 / 2**

clear: clear variables and functions from memory; *tic* and *toc*: start and read a stopwatch timer; *who* and *whos*: list current variables in workspace (short and long form, respectively); *format*: set output format, try:

```
>> format short
>> 1/3
>> format long
>> 1/3
```

- **Section 8**

script1.m:

```
alpha = 33 / 180 * pi;  
gamma = 90 / 180 * pi;  
beta = pi - alpha - gamma;  
a = 8 / sin( gamma ) * sin( alpha )  
b = 8 / sin( gamma ) * sin( beta )
```

- **Section 9**

sineTheorem.m:

```
function [ a, b, c, alpha, beta, gamma ] = sineTheorem( c, alphaDegrees )  
  
% Calculate all angles (in radians)  
gamma = 90 / 180 * pi;  
alpha = alphaDegrees / 180 * pi;  
beta = pi - alpha - gamma;  
  
% Now calculate the lengths of sides a and b (we know c)  
a = c / sin( gamma ) * sin( alpha );  
b = c / sin( gamma ) * sin( beta );  
  
% Return the angles in degrees  
alpha = alphaDegrees;  
beta = beta / pi * 180;  
gamma = gamma / pi * 180;
```