

Matlab Lesson #4

1. Please review all commands in Matlab Lessons #1, #2 and #3.
2. 2-dimensional repeated integrals

Example 1. Find $\int_1^5 e^{-x^2+x} dx$

```
help sym/int          % getting help

syms x;              % declare x as a variable

myint = int( exp(-x^2+x), x, 1,5)
% the command int( exp(-x^2+x), x, 1,5) tell the matlab to
% integrate exp(-x^2+x) in x from 1 to 5. The format is
% int('the function', 'the variable to integrate', 'lower limit', 'upper limit')
% Note that matlab gives an explicit answer in terms of erf function.

double(myint)
% Now we convert it to numbers.
```

Example 2. Find repeated integral $\int_0^1 \left(\int_{-y}^{2y^2} \sin(x+y) dx \right) dy$

```
help sym/int          % getting help

syms x y;            % declare x, y as variables

myint = int( int(sin(x+y), x, -y, y^2), y, 0,1)
% the internal command int(sin(x+y), x, -y, y^2) tell the matlab to
% integrate sin(x+y) in x from -y to y^2. The format is
% int('the function', 'the variable to integrate', 'lower limit', 'upper limit')
% Note that matlab gives an explicit answer in the above.

double(myint)
% Now we convert it to numbers.
```