

Evaluating integrals in MATLAB

In class, I evaluated

$$\int_1^2 e^x (\sqrt{1 + \cos^2 x}) dx$$

using MATLAB. Here is a quick summary of the commands I used:

```
1 >> f=@(x)exp(x).*sqrt(1+power(cos(x),2))
2
3 f =
4
5     function_handle with value:
6
7     @(x)exp(x).*sqrt(1+power(cos(x),2))
8
9 >> integral(f,1,2)
10
11 ans =
12
13     4.8414
```

A few points to note:

1. The commands are listed in lines 1 and 9, the rest are the outputs from said commands.
2. Notice that the multiplication is componentwise, i.e. `.*` instead of just `*`. If you need to define division, this would also be componentwise as `./`.
3. If you type `help elfun` into the command line, MATLAB will list all the elementary functions it knows.