

160 MatLab notes for Homework 1

Use symbolic variables to get exact answers when exact answers are possible. "exp(x)" is used for e^x in matlab. "int" and "diff" are the integral and derivative operators. Separating expressions with a comma or without any suffix will tell matlab to print the answer. Using a semicolon will suppress the answer.

```
syms y x p
int(exp(y),y), diff(x*int(p^2,p,0,x))
```

```
ans = ey
```

```
ans =
```

$$\frac{4x^3}{3}$$

```
diff(x^3,x);
```

A numeric variable is a list or array of values, also known as a vector or matrix of values. You don't need to declare a numeric variable as you did the symbolic variables, but you must give it values. Below I am assigning the right endpoint of each of the 100 sub-intervals for $[0, \pi]$. Notice the period before the multiplication symbol: this produces a single value. " * " means matrix multiplication, not what you want in this case. It is interesting to note how matlab uses two different notations for scientific notation. The "vpa" command rounds the answer to any number of significant digits that you want.

```
t=pi/100:pi/100:pi;
I=sum((pi/100)*(cos(t).*sin(t)))
```

```
I = -5.1335e-17
```

```
vpa(I,4)
```

```
ans = -5.134 10-17
```