

Math 160 HW #0 MatLab Notes

To differentiate or integrate use "symbolic" variables. These must be declared using the syms command.

```
syms x
fp(x)=diff(x^2*exp(3*x),x);
fp(3)
```

```
ans = 33 e9
```

```
I = int(x^2*log(x + 1),x,0,1)
```

```
I =
```

$$\frac{2 \log(2)}{3} - \frac{5}{18}$$

```
vpa(I,3)
```

```
ans = 0.184
```

The semicolon suppresses the output. Notice you must show multiplication with the asterisk. Writing 3x will give an error, for instance. The vpa command gives an estimate of the exact value to the specified number of digits.

When wishing to estimate an integral, for instance, you would use a numeric variable. This is the default type of variable, so it doesn't have to be declared, but it is a vector and so use .*, ./, .^ for multiplication, division, and exponentiation.

```
y=0:0.0001:1;
sum(y.^2.*log(y + 1)./10000)
```

```
ans = 0.1844
```