

200 Matlab notes for HW #5

Multiple integration is performed using the "int" command multiple times.

To evaluate a double integral of $y^2 \exp(x*y)$ for $0 < x < y$ and $0 < y < 1$ you would do this:

```
syms x y
int(int(y^2*exp(x*y),x,0,y),y,0,1)
```

ans =

$$\frac{e}{2} - 1$$

Remember that a dot product of two vectors is a product of the first vector with the transpose of the second vector. An apostrophy is used for the transpose of a vector.

```
[2,3,4]*[1,4,-2]'
```

ans = 6

When writing the vector differential of arc length in terms of the parameter t used in the parameterization of the curve, you will need to substitute before integrating. For instance, the work done on a particle by the field $F = \langle -y^2, x \rangle$ about the unit circle centered at the origin and oriented clockwise would be

```
syms t
a=[sin(t) cos(t)];
ap=diff(a,t);
F=[-y^2 x/2];
int(subs(F,[x y],a)*ap',t,0,2*pi)
```

ans =

$$-\frac{\pi}{2}$$

Notice how the "subs" command was used.