Math 201
Maple Handout # 10.1
Parametric Equations

In this assignment we will learn how to plot parametric curves.

NOTE: To type click on T icon. To insert > for typing math, click on [> icon

```
> restart:
```

This command clears maple memory and assign new values to variable.

```
> with(plots):
```

This command includes maple inbuilt package "plots"

```
Warning, the name changecoords has been redefined
```

Define a parametric curve

```
> x:=t->t^2-2*t+2;
```

$$x := t \to t^2 - 2t + 2$$

```
> y:=t->t+1;
```

$$y := t \to t + 1$$

```
> plot([x(t),y(t),t=-2..4]);
```

```
> animatecurve( [x(t),y(t),t=-2..4],view=[0..8,-
1..5],frames=200);
```

```
> x1:=t->t+2*sin(2*t);
```

$$x1 := t \to t + 2\sin(2t)$$

```
> y1:=t->t+2*cos(5*t);
```

$$y1 := t \to t + 2\cos(5t)$$

```
> plot([x1(t),y1(t),t=-2*Pi..2*Pi]);
```

```
> animatecurve( [x1(t),y1(t),t=-2*Pi..2*Pi],view=[-8..8,-
8..8],frames=100,numpoints=100, color=black,thickness=3);
```

```
> x2:=t->cos(t)-cos(80*t)*sin(t);
```

$$x2 := t \to \cos(t) - \cos(80t)\sin(t)$$

```
> y2:=t->2*sin(t)-sin(80*t);
```

$$y2 := t \to 2\sin(t) - \sin(80t)$$

```
> plot([x2(t),y2(t),t=0..2*Pi]);
```

```
> animatecurve( [x2(t),y2(t),t=0..2*Pi],view=[-2..2,-
3..3],frames=100,numpoints=1000, color=black,thickness=2);
```

Exercise 10.1

Prob#1

```
> x:=t->5*sin(t);
```

$$x := t \to 5\sin(t)$$

```
> y:=t->t^2;
```

$$y := t \to t^2$$

```
> plot([x(t),y(t),t=-Pi..Pi]);

> animatecurve( [x(t),y(t),t=-Pi..Pi],view=[-5..5,-
1..10],frames=200);
```

Prob#13

```
> x:=t->sin(t);
```

$$x := \sin$$

```
> y:=t->cos(t);
```

$$y := \cos$$

```
> plot([x(t),y(t),t=0..Pi]);

> animatecurve( [x(t),y(t),t=0..Pi],view=[0..1,-
1..1],frames=100);

> x(t):=sin(t+sin(t));
```

$$x(t) := \sin(t + \sin(t))$$

```
> y(t):=cos(t+cos(t));
```

$$y(t) := \cos(t + \cos(t))$$

```
> plot([x(t),y(t),t=-5..5]);

> x(t):=cos(t);
```

$$x(t) := \cos(t)$$

```
> y(t):=sin(t+sin(5*t));
```

$$y(t) := \sin(t + \sin(5t))$$

```
> plot([x(t),y(t),t=-5..5]);

> animatecurve([x(t),y(t),t=-5..5],view=[-1..1,-
1..1],frames=100,numpoints=200);

> x(t):=t^3-1;;
```

$$x(t) := t^3 - 1$$

```
> y(t):=2-t^2;
```

$$y(t) := 2 - t^2$$

```
> plot([x(t),y(t),t=-2..2]);
```

```
> x(t):=t^3-2*t;
```

$$x(t) := t^3 - 2t$$

```
> y(t):=t^2-t;
```

$$y(t) := t^2 - t$$

```
> plot([x(t),y(t),t=-2..2]);
```

```
> x(t):=cos(t)^2;
```

$$x(t) := \cos(t)^2$$

```
> y(t):=cos(t);
```

$$y(t) := \cos(t)$$

```
> plot([x(t),y(t),t=0..5]);
```

```
> animatecurve([x(t),y(t),t=0..5],view=[0..1,-1..1],frames=100);
```

```
>
```