**Mathematics 1100Y – Calculus I: Calculus of one variable**
Trent University, Summer 2012
**Solutions to Assignment #2**
**More plots with** `Maple`

Before tackling this assignment, you should consult `Maple`'s help for details on how to get it to do plots of parametric curves and of curves in polar coordinates. (The `plots` package adds a `polarplot` command … )

For questions **1** and **2** below please submit a printout of a Maple worksheet(s) as your solution.
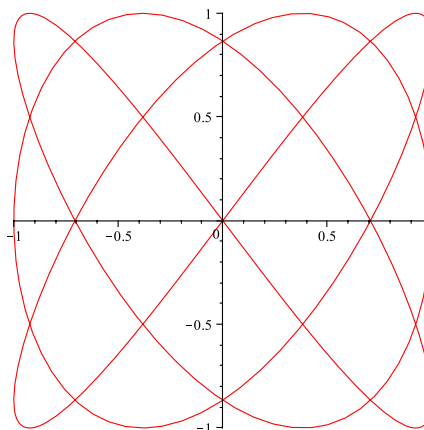
**1.** Use `Maple` to plot the parametric curves given by $x = t$ and $y = t$, by $x = \cos(3t)$ and $y = \sin(4t)$, by $x = \cos(t)$ and $y = \frac{1}{2} + \frac{1}{2}\cos(2t)$, and by $x = 1$ and $y = \sin(t)$, respectively, for $0 \le t \le 2\pi$ in each case. *[4]*
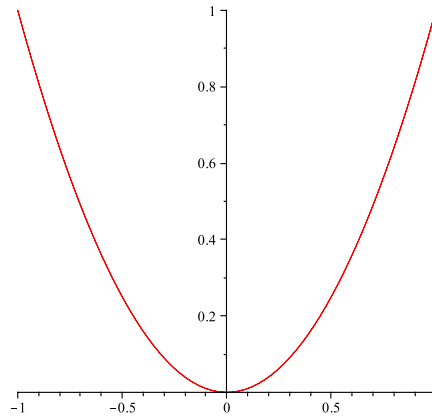
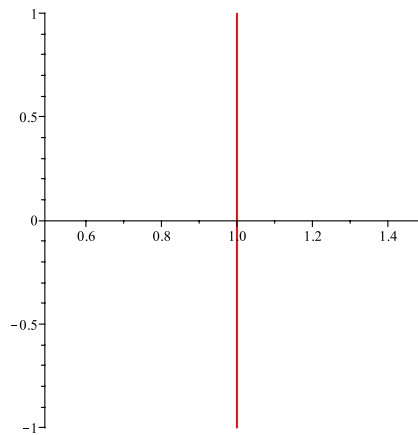SOLUTION. Here goes, in order:

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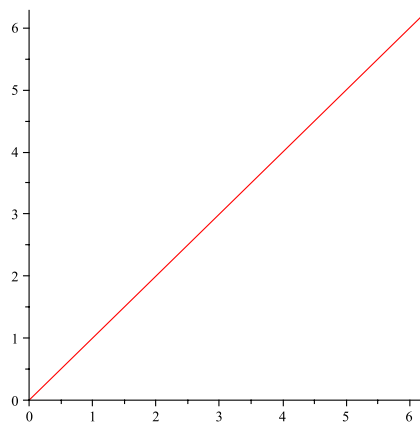


```
> plot[cos(3*t),sin(4*t),t=0..2*Pi])
```



1

```
> plot([cos(t),1/2+(1/2)*cos(2*t),t=0..2*Pi])
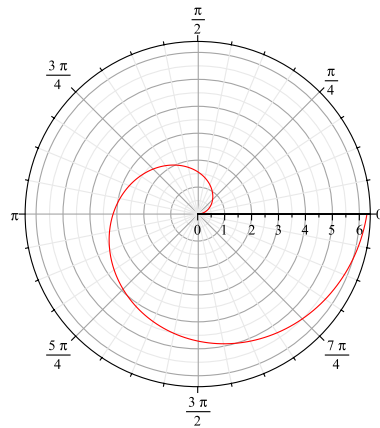```



```
> plot([1,sin(t),t=0..2*Pi])
```



The plots above were scaled down to save paper. ∎

2. Use Maple to plot the polar curves given by $r = \theta$, by $r = 1$, by $r = 1 - \cos(\theta)$, respectively, for $0 \leq \theta \leq 2\pi$ in each case, and by $r = \dfrac{\sin(\theta)}{\cos^2(\theta)}$ for $-\pi/2 < \theta < \pi/2$. [4]
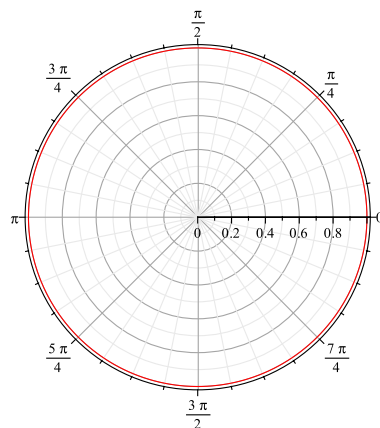
SOLUTION. Here goes, in order:

```
> with(plots);
> polarplot(theta,theta=0..2*Pi)
```
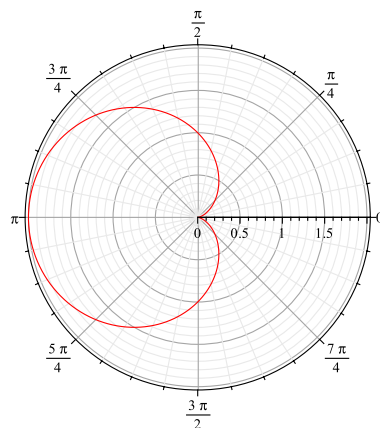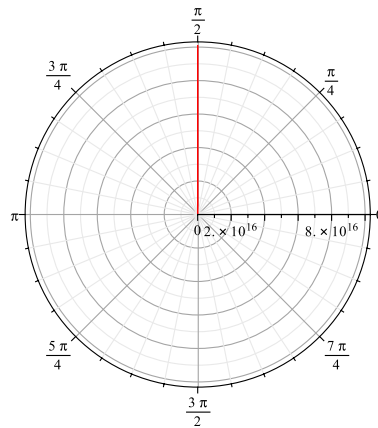


```
> polarplot(1,theta=0..2*Pi)
```



```
> polarplot(1-cos(theta),theta=0..2*Pi)
```

```
> polarplot(sin(theta)/cos(theta)^2,theta=-(1/2)*Pi..(1/2)*Pi)
```



[Just for fun, what's going on in the last plot?]

The plots above were scaled down to save paper. ■

**3.** Which of the curves you plotted in **1** and **2** are really the same? *[2]*

SOLUTION. None of them! ■