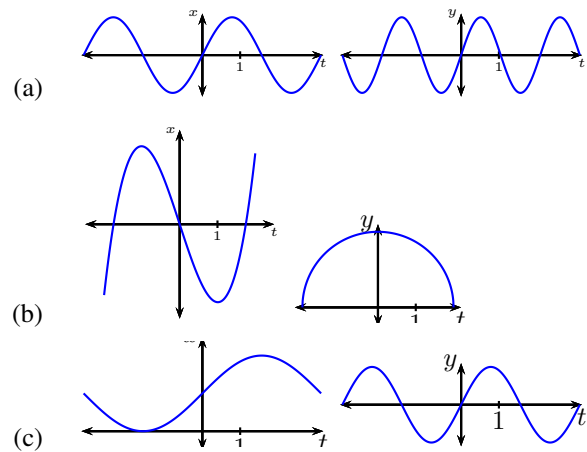
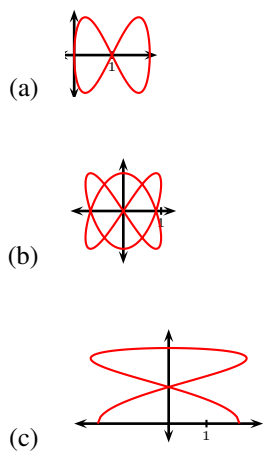


# Calculus II

## Homework

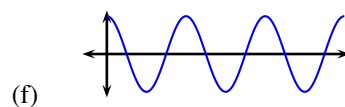
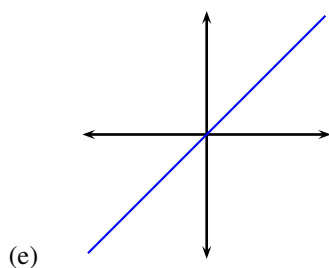
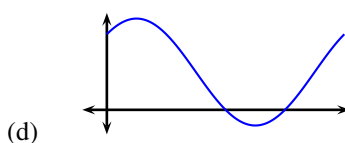
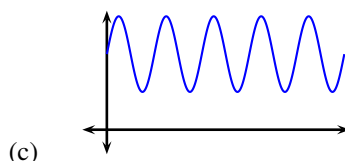
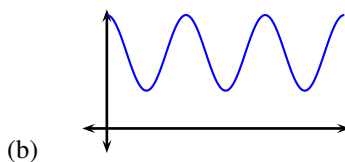
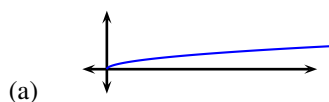
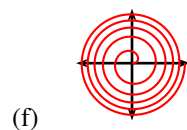
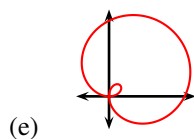
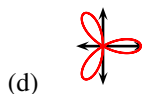
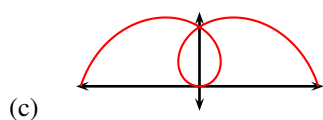
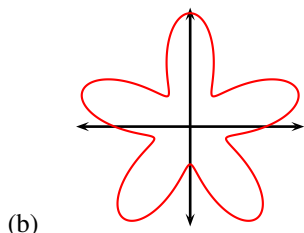
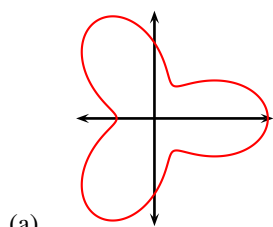
### Curves and polar curves

1. Match the graphs of the parametric equations  $x = f(t)$ ,  $y = g(t)$  with the graph of the parametric curve  $\gamma : \begin{cases} x = f(t) \\ y = g(t) \end{cases}$



2.

Match the graph of the curve to its graph in polar coordinates and to its polar parametric equations.



(i)  $r = 1 + \sin(\theta) + \cos(\theta)$

(ii)  $r = \theta, \theta \in [-\pi, \pi]$

(iii)  $r = \cos(3\theta), \theta \in [0, 2\pi]$

(iv)  $r = \frac{1}{4}\sqrt{\theta}, \theta \in [0, 10\pi]$

(v)  $r = 2 + \sin(5\theta)$

(vi)  $r = 2 + \cos(3\theta)$

3.

- Sketch the curve given in polar coordinates by  $r = 2 \sin \theta$ . What kind of a figure is this curve? Find an equation satisfied by the curve in the  $(x, y)$ -coordinates.
- Sketch the curve given in polar coordinates by  $r = 4 \cos \theta$ . What kind of a figure is this curve? Find an equation satisfied by the curve in the  $(x, y)$ -coordinates.
- Sketch the curve given in polar coordinates by  $r = 2 \sec \theta$ . What kind of a figure is this curve? Find an equation satisfied by the curve in the  $(x, y)$ -coordinates.
- Sketch the curve given in polar coordinates by  $r = 2 \csc \theta$ . What kind of a figure is this curve? Find an equation satisfied by the curve in the  $(x, y)$ -coordinates.
- Sketch the curve given in polar coordinates by  $r = 2 \sec(\theta + \frac{\pi}{4})$ . What kind of a figure is this curve? Find an equation satisfied by the curve in the  $(x, y)$ -coordinates.
- Sketch the curve given in polar coordinates by  $r = 2 \csc(\theta + \frac{\pi}{6})$ . What kind of a figure is this curve? Find an equation satisfied by the curve in the  $(x, y)$ -coordinates.