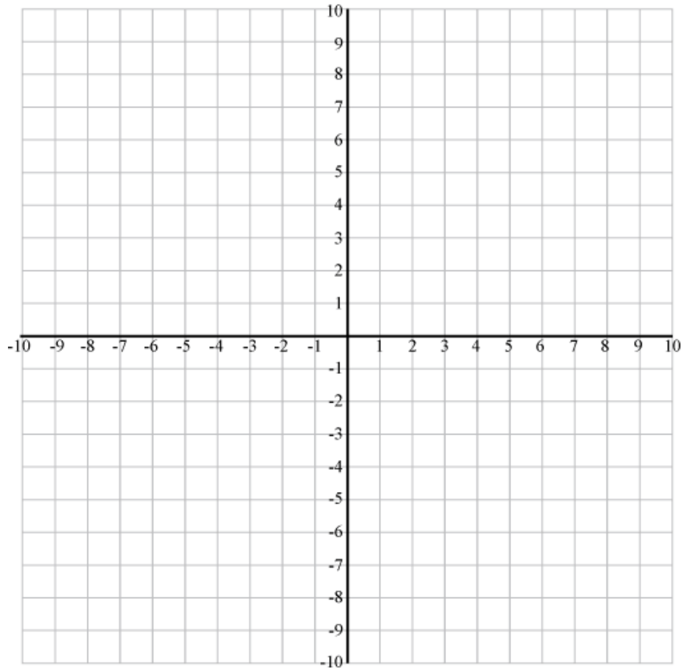
Sketch the parametric function

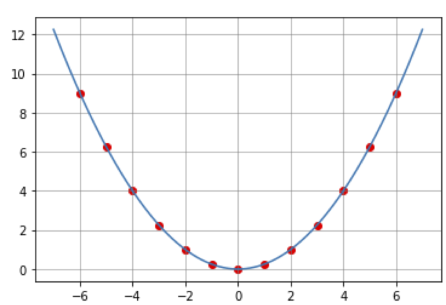
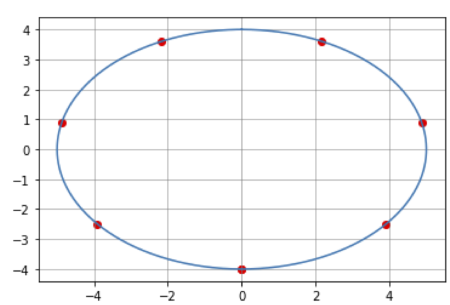
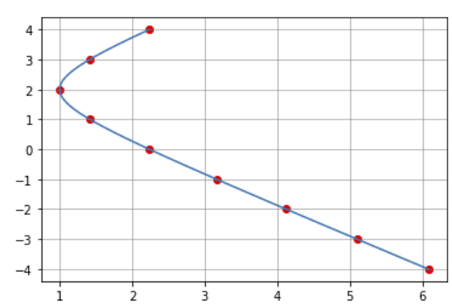
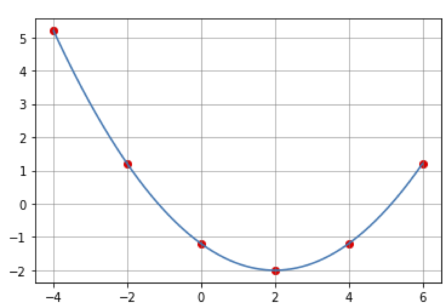
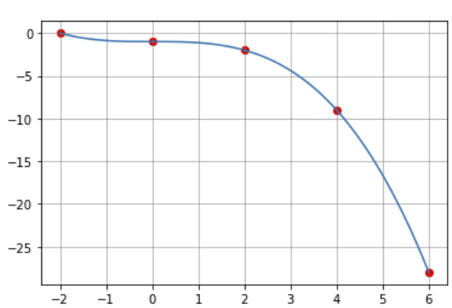
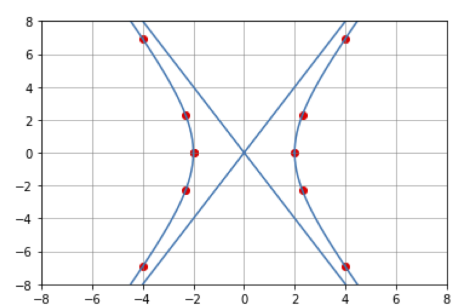
$x(t) = 2t - 1 \qquad y(t) = t^2$

t	$x(t)$	$y(t)$
-3		
-2	-5	4
-1		
0		
1		
2		
3		



Match each graph to its parametric equation

1. $x(t) = t, \quad y(t) = \frac{t^2}{4}$
2. $x(t) = 2\sec(t), \quad y(t) = 5\tan(t)$
3. $x(t) = 5\sin(t), \quad y(t) = 4\cos(t)$
4. $x(t) = 2 - 2t, \quad y(t) = \frac{4}{5}t^2 - 2$
5. $x(t) = \sqrt{t^2+1}, \quad y(t) = 2 - t$
6. $x(t) = -2t, \quad y(t) = t^3 - 1$

Eliminate the parameter to write the parametric equation as a rectangular equation.

1. $x = 1/2t + 4, \qquad y = t^3$

   - We need to solve for the parameter using one of the two equations, usually we select the one that makes this easier. For this example, it is easier to solve for t using the equation ☐., which gives

     $$t = \square.$$

   - Next, we substitute this t into the other equation, in this example that gives us

     $$y = \square$$

2. $x = \cos t, \qquad y = 2\sin^2 t$

   - In this case, solving for the parameter makes things more complicated. When we have trigonometric expressions, we should try to use the Pythagorean identities. In this case we need to find expressions for $\cos^2 t$ and $\sin^2 t$ in terms of x and y:

     $$\cos^2 t = \square, \qquad \sin^2 t = \square.$$

   - We substitute these expressions into the identity:

     $$\begin{aligned} \cos^2 t &+ \sin^2 t &= 1 \\ \square &+ \square &= 1. \end{aligned}$$

3. $x = \dfrac{1}{t-2}, \qquad y = 4t + 5$

4. $x = -4 + 3\tan t, \qquad y = 7 - 2\sec t$