

Exercise 10

For the following exercises, sketch the parametric equations by eliminating the parameter. Indicate any asymptotes of the graph.

$$x = e^t, \quad y = e^{2t} + 1$$

Solution

Write y in terms of e^t and then substitute x .

$$\begin{aligned} y &= e^{2t} + 1 \\ &= (e^t)^2 + 1 \\ &= x^2 + 1 \end{aligned}$$

This is a parabola (only the right half since x is never negative) opening upward. Below is a plot of $(x(t), y(t))$ for $-10 \leq t \leq 1$.

