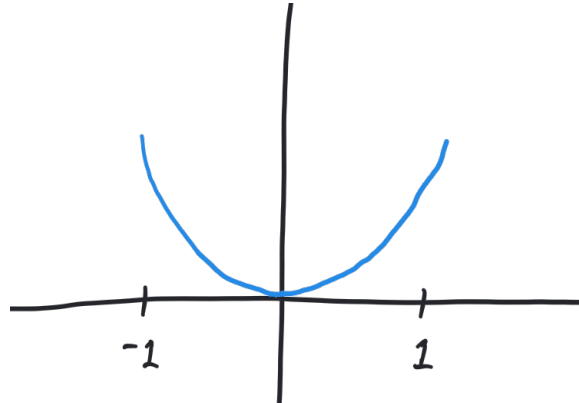


Problem 1. Consider the graph of the parabola $y = x^2$ from -1 to 1 :



- (a) Give a parametrization of this curve that traces it out from left to right as time proceeds. (That is, give a parametric curve $c(t) = (x(t), y(t))$ that sketches out this section of the curve from some time a to time b .)
- (b) Give a parametrization of this curve that traces it out from right to left as time proceeds.

Problem 2. Consider the parametric curve given by

$$x(t) = \cos(\pi(1 - t^2)), \quad y(t) = \sin(\pi(1 - t^2)),$$

from $t = -1$ to $t = 1$.

- (a) Describe (in words) the curve this sketches out.
- (b) If a particle is at position $(x(t), y(t))$ at time t , how fast is it moving at time $t = 0$?