**Problem statement** The point $P$ travels on the parabola $y = x^2$.

a) Give parametric formulas for the location of $P$ where the parameter is the first coordinate of the point $P$.

b) Give parametric formulas for the location of $P$ where the parameter is the second coordinate of the point $P$. The parametric formulas will have to be given “piecewise”.

c) Give parametric formulas for the location of $P$ where the parameter is the angle that the ray from the origin to $P$ makes with the positive $x$-axis.

d) Give parametric formulas for the location of $P$ where the parameter is the angle that the ray from the point $(0, 1)$ to $P$ makes with the ray from $(0, 1)$ to the origin.

e) Give parametric formulas for the location of $P$ where the parameter is the distance from the origin to $P$. The parametric formulas again will have to be given “piecewise”.