(1) Let $F$ be a fixed point in the plane and let $l$ be a fixed line in the plane with $\text{dist}(F, l) = k$. Choose a coordinate system for the plane and find an equation for the parabola with focus $F$ and directrix $l$.

(2) Let $F$, $l$, and $k$ be as in part (1). Which choice of coordinate system leads to an equation of the form $y = ax^2$?