Consider a linear transformation $T:\mathbb{R}^2 \to \mathbb{R}^2$ and the matrix representation of T is $\mathbf{M}$, where

$$\mathbf{M} = \begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix}.$$

A point $P(x,y)$ on the curve $y = x^2$ is mapped to $P'(5,0)$ via T. The new coordinates

$$(x',y') = (x\cos\theta - y\sin\theta, x\sin\theta + y\cos\theta)$$

implies the following system of equations

$$x\cos\theta - y\sin\theta = 5$$
$$x\sin\theta + y\cos\theta = 0$$

and as $y = x^2$,

$$x\cos\theta - x^2\sin\theta = 5$$
$$x\sin\theta + x^2\cos\theta = 0$$

x must be non-zero. Suppose otherwise, then P would be the origin, and then P' would still be the origin (i.e. P is invariant under T). We have $x = -\tan\theta$, and thus

$$-\sin\theta - \sin\theta\tan^2\theta = 5.$$

Solving gives $\theta = -1.1314$ radians so $\tan\theta = -2.13$ and note that θ is negative since we are dealing with a clockwise rotation about the origin.