



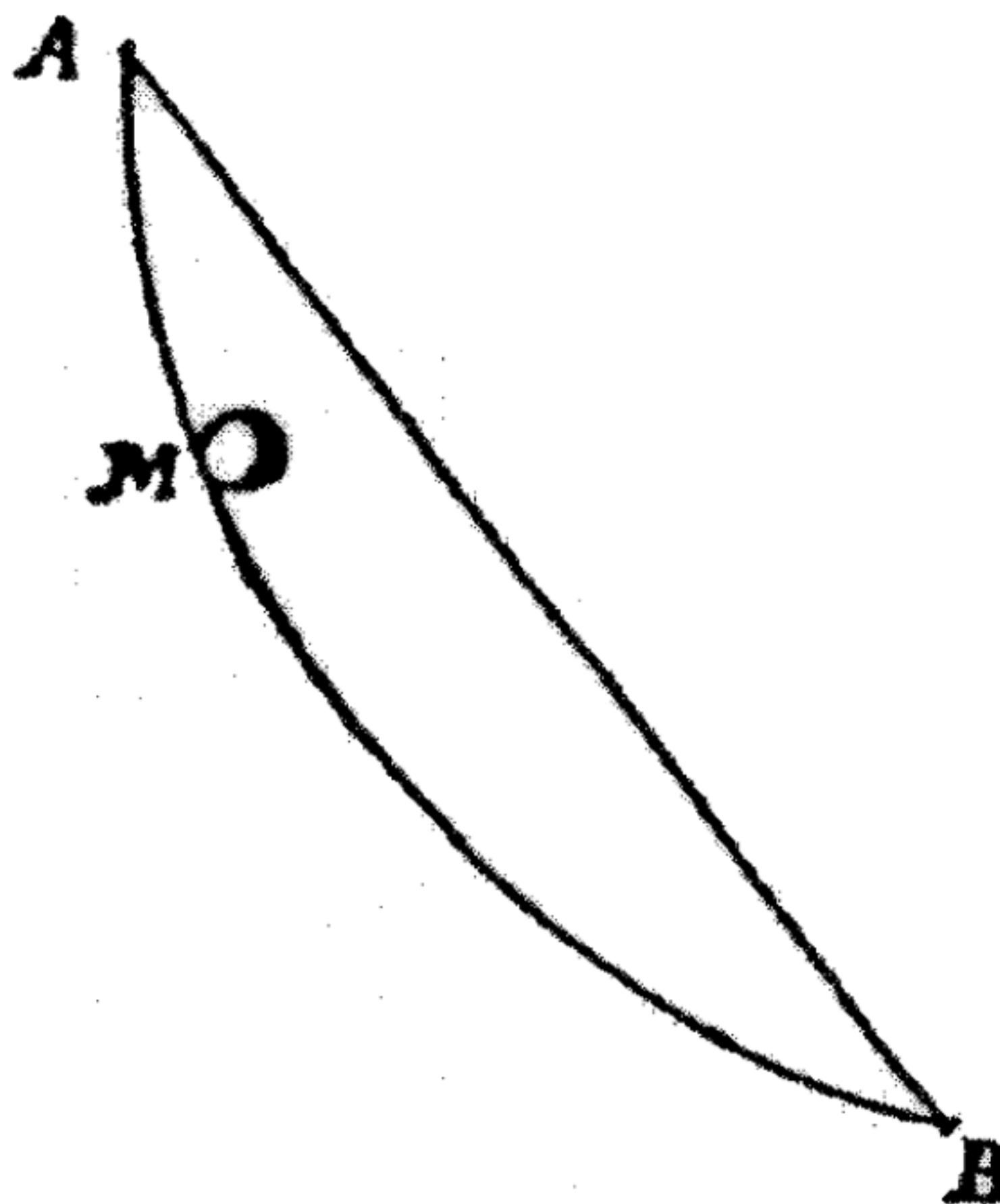
Rough
Felt

Smooth
Felt

Johann Bernoulli



1696
the brachistochrone problem



$$x = r(t - \sin t)$$

$$y = r(1 - \cos t)$$