Math 360

Lecture 7

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Problem Statement: Given a ball with mass placed at the top of an immovable ramp, how long does it take for the ball to reach the bottom if only gravity is acting on it?

Variables and Parameters:

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| --- | --- | --- | --- |
| **Description** | **Symbol** | **Dimensions** | **Type** |
| Angle of Inclination | theta | 1 | Parameter |
| Mass of Ball | m | M | Parameter |
| Radius of the ball | r | R | Parameter |
| Friction | Fr | MLT^-2 | Parameter |
| Length of the hypotenuse | l | L | Parameter |
| Constant of gravity | g | LT^-2 | Parameter |
| Time | t | T | Independent |
| Velocity | v | LT^-1 | Dependent |

Assumptions and Constraints:

* No other forces act on the ball as it rolls down the ramp apart form friction and gravity
* The ramp is immovable
* The ramp is wide enough for the ball
* Always starting at the top of the ramp