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Space Surveying

In his book *The Greek Myths*, Robert Graves refers to the castration of Uranus, who fathered the Titans on Mother Earth after he had thrown his rebellious sons, the Cyclops, into Tartarus. Tartarus is a gloomy place in the Underworld that lies as far distant from the Earth as the Earth does from the sky; *it would take a falling anvil 9 days to reach its bottom.*

Let us use this concept of *an anvil falling in Earth's gravity* to calculate how far it would fall (if it remains under these conditions) in 9 days. This is an example of Uniform Accelerated Motion. We assume the simplest of conditions: 0 initial velocity (falling), no air resistance (an anvil is heavy and solid), and no limit to the distance covered.

Here s = distance, t = time in seconds, $g = 9.8 \text{ m/s}^2$ the acceleration due to Earth's gravity.

Thus, $s = 4.9 t^2$.

- Use this formula to calculate how far the anvil will fall in 9 days, and compare that distance to the mean distance of the Earth to Uranus.
- If this is how the ancients measured distance and time, what other present-day applications can you think of?