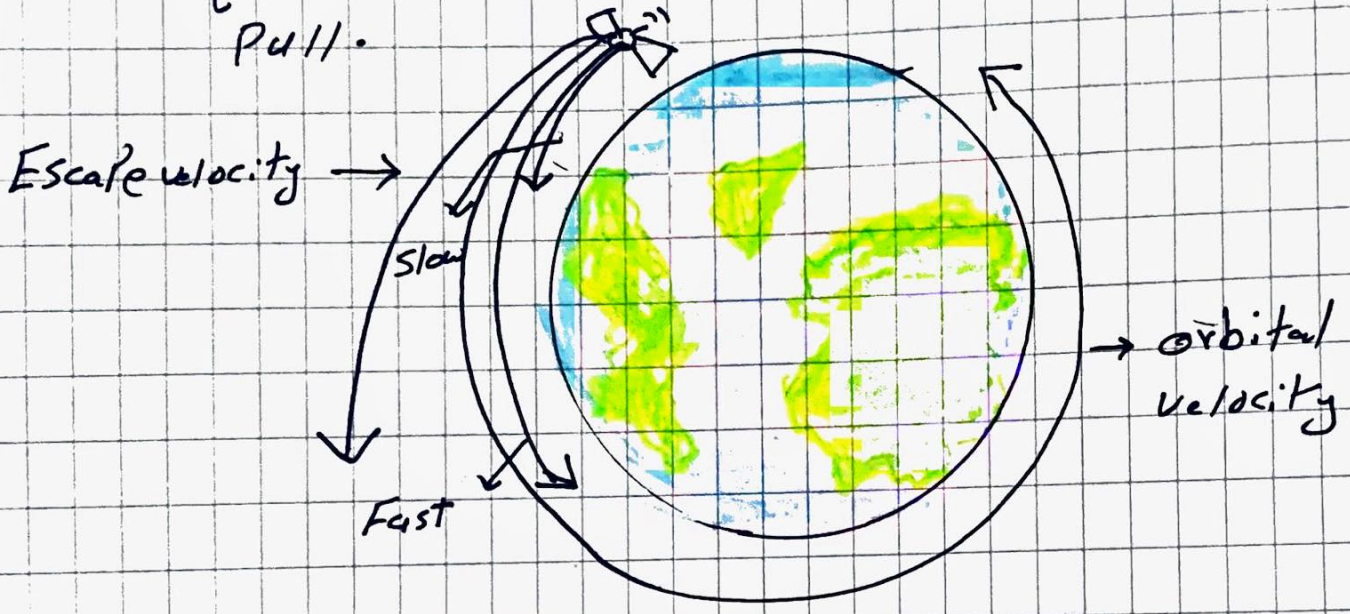
Escape Velocity

Escape velocity is the minimum velocity required to escape a planet's gravitational pull.



in general escape, velocity is achieved when the object moves with a velocity at wich the arithmetic sum of the object's gravitational Potentail energy and it's kinetic energy equates to Zero.

that is, the object should Possess greater kinetic energy than the gravitiational Potential energy to escape to infinity.

by the Principle of consorvation energy we can write:

$$\frac{1}{2} m v^2 - \frac{G M_M}{r} = 0$$

$$\frac{1}{2} m v^2 = \frac{GMm}{r} \Rightarrow v^2 = \frac{2GM}{r}$$

$$\therefore v = \sqrt{\frac{2GM}{r}}$$

v = escape velocity

G = universal gravitational constant

M = the mass

r = the distance from centre of massive body to the object

Matlab code:

```
clc
clear all
close all
R = 6378;
G = 6.6 e-11;
M = 6 e 24 ;
Z = 100 : 1000 : 15000;
V = sqrt ( 2 * (G * M) ./ (R + Z));
Plote (Z, V)
Xlable ('Z , km')
Y lable ('V, km/s')
```