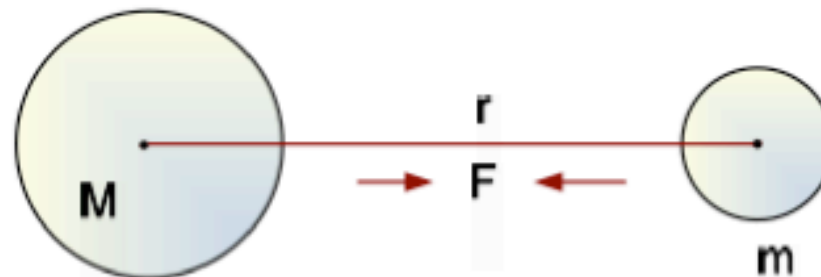


ORBIT

A PATH OF ONE BODY IN REVOLUTION
AROUND ANOTHER BY GRAVITY!

ORBITS ARE CAUSED BY NEWTON'S LAW OF
UNIVERSAL GRAVITATION:

$$F = \frac{Mm}{r^2}$$



WHERE:

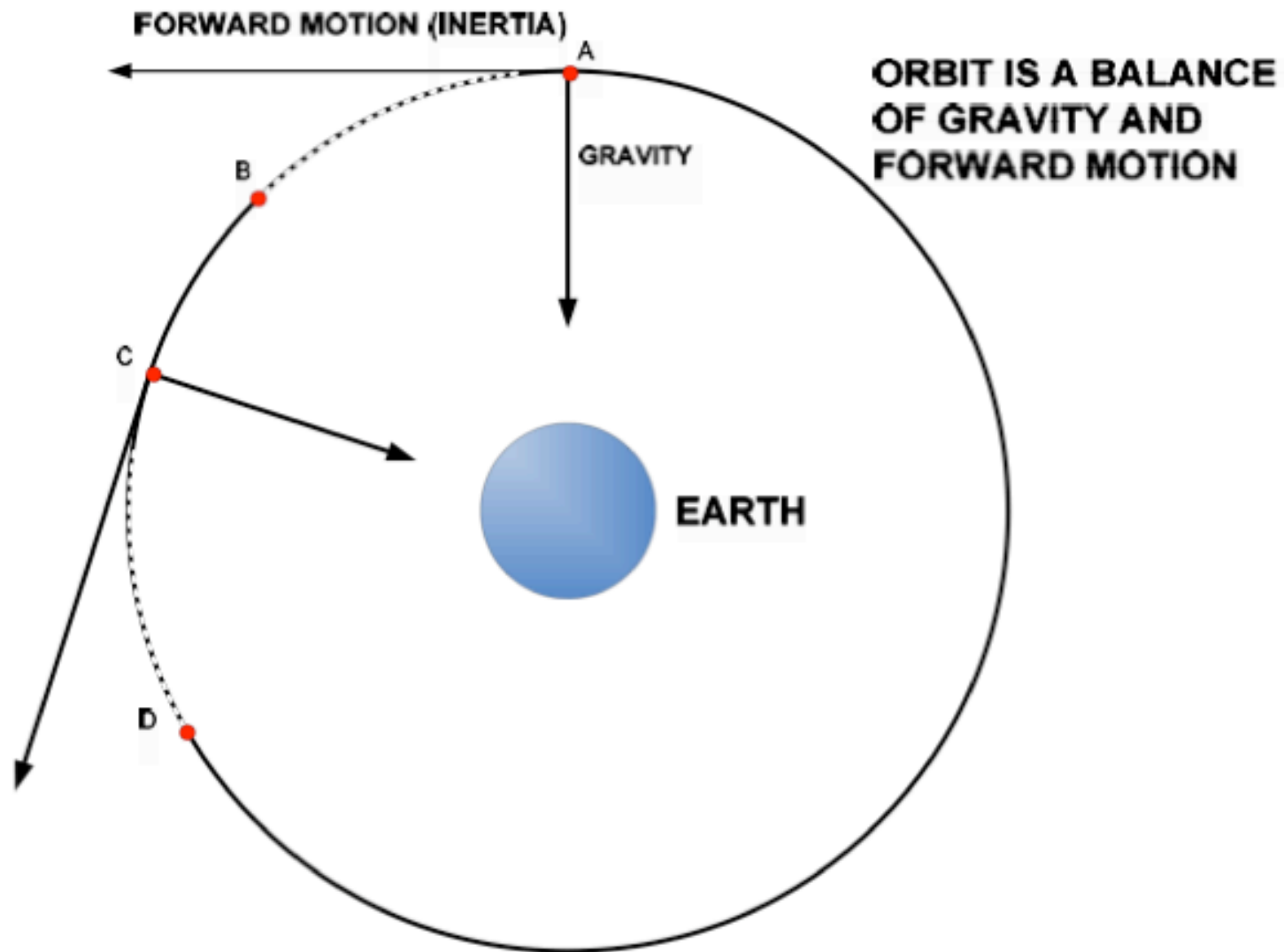
F = FORCE BETWEEN TWO BODIES

M = MASS OF FIRST BODY

m = MASS OF SECOND BODY

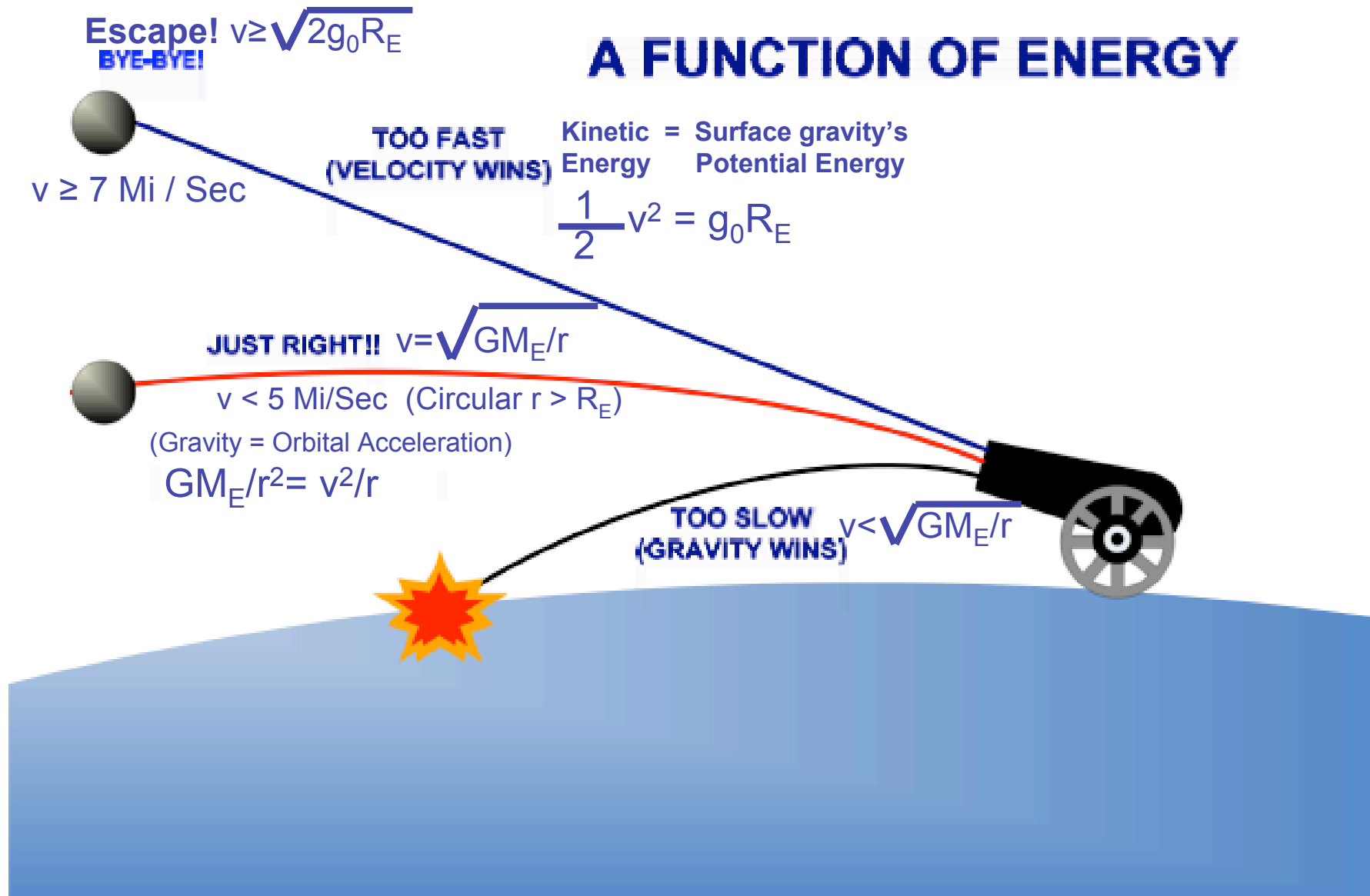
r = RADIUS (DISTANCE) BETWEEN m AND M

WHAT MAKES AN ORBIT?

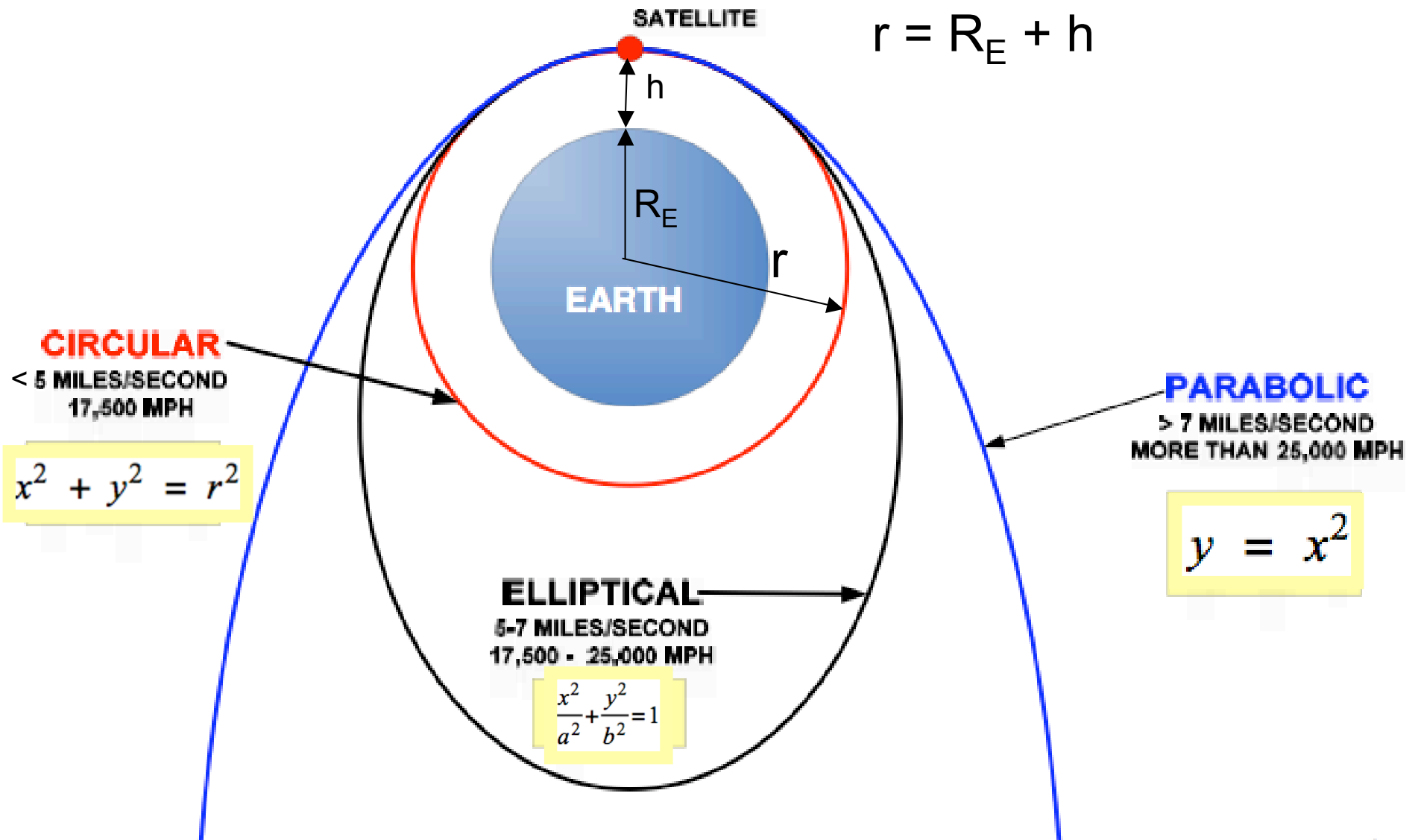


HOW TO GET INTO ORBIT

A FUNCTION OF ENERGY



TYPES OF ORBITS

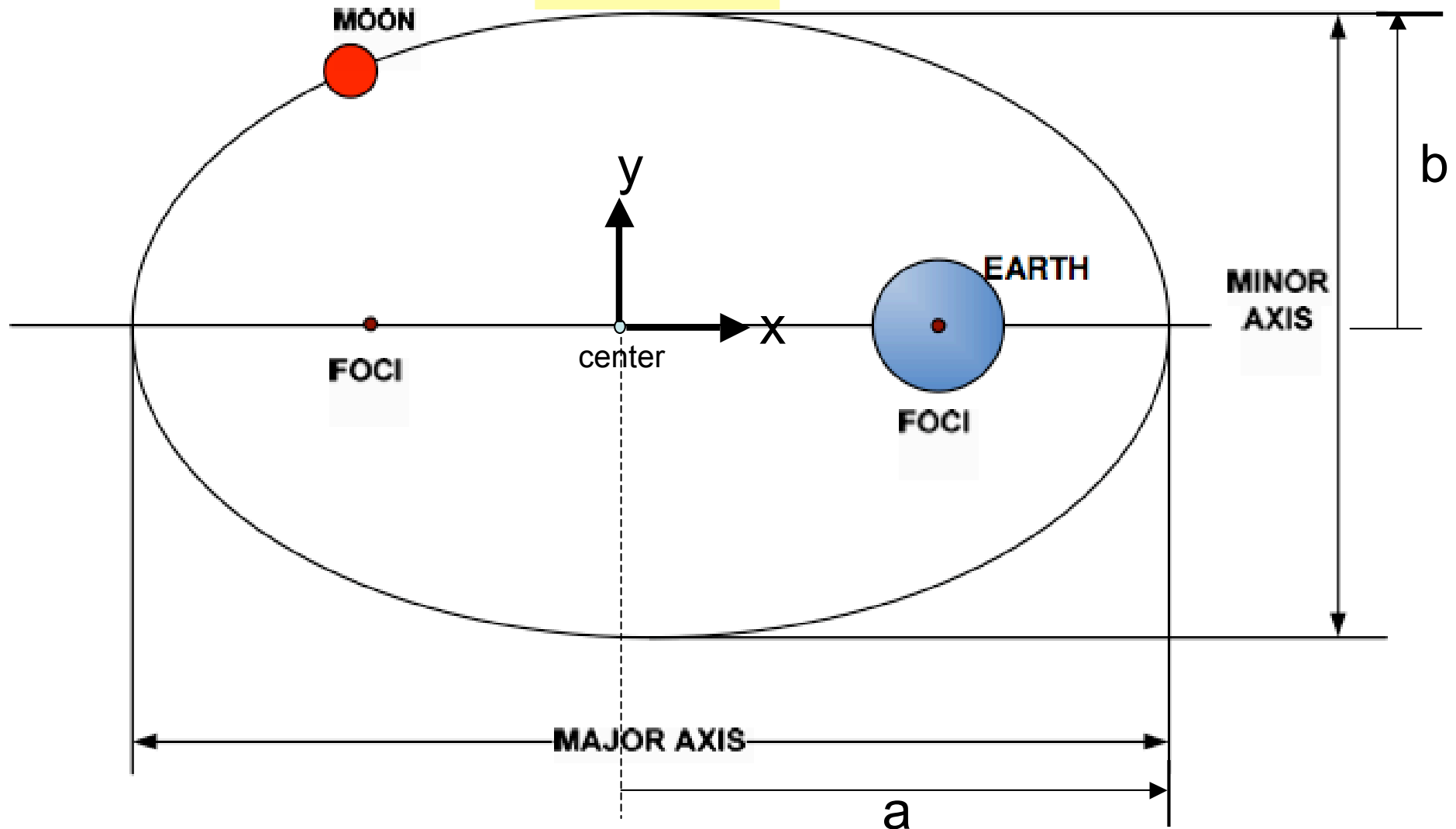


WHAT IS AN ELLIPTICAL ORBIT?

“a” is called the Semi-Major Axis

“b” is called the Semi-Minor Axis

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$



Some Properties of the Ellipse

The semi-major axis (denoted by “a” in the figure) and the semi-minor axis (denoted by “b” in the figure) are one half of the major and minor diameters, respectively.

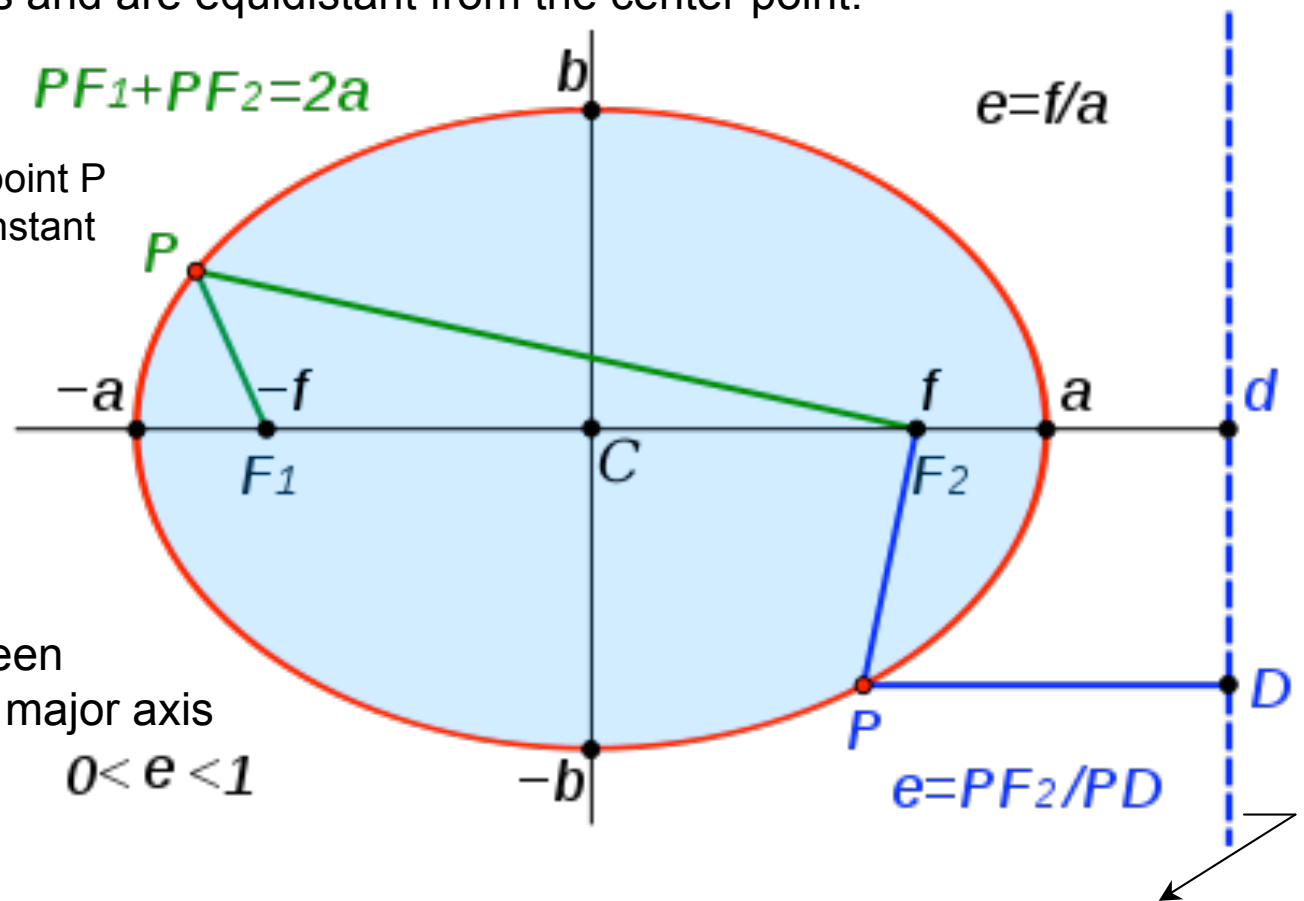
The foci of the ellipse are two special points F1 and F2 on the ellipse's major axis and are equidistant from the center point.

The sum of the distances from any point P on the ellipse to those two foci is constant and equal to the major diameter ($PF_1 + PF_2 = 2a$).

Each of these two points is called a focus of the ellipse.

The eccentricity of an ellipse, usually denoted by e, is the ratio of the distance between the two foci, to the length of the major axis or $e = 2f/2a = f/a$.

For an ellipse the eccentricity is between 0 and 1 ($0 < e < 1$).



Directrix