AGG0012 – Problemas Integrados em Ciências da Terra II

Bloco IV - aula 1
Gravitação
Victor Sacek

The Feynman Lectures on Physics

free to read online!

http://www.feynmanlectures.caltech.edu/

The Feynman Lectures on Physics

Feynman • Leighton • Sands

Caltech and The Feynman Lectures Website are pleased to present this online edition of *The Feynman Lectures on Physics*. Now, anyone with internet access and a web browser can enjoy **reading** a high quality up-to-date copy of Feynman's legendary lectures.

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Volume I

MAINLY MECHANICS, RADIATION AND HEAT

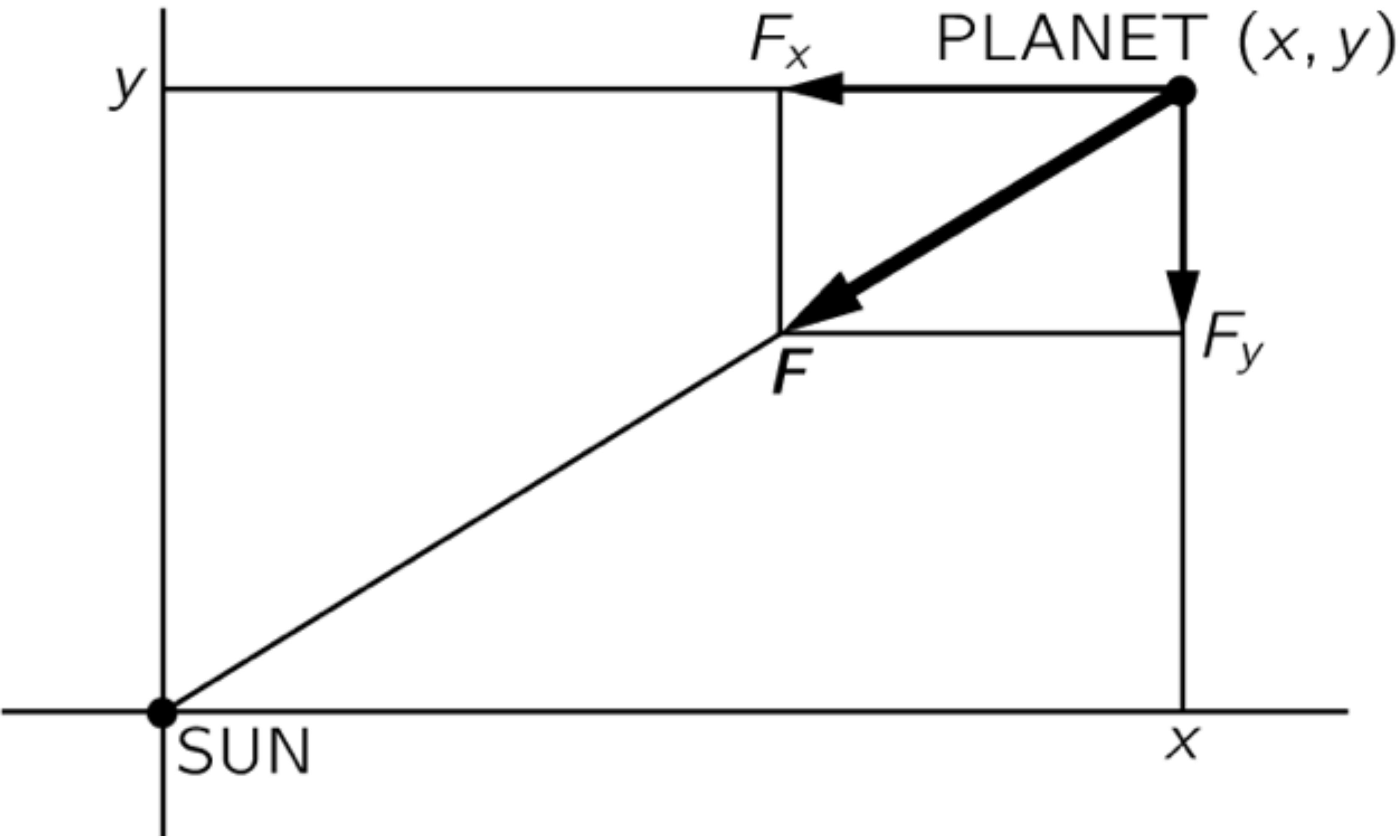
Volume II

MAINLY ELECTROMAGNETISM AND MATTER

Volume III

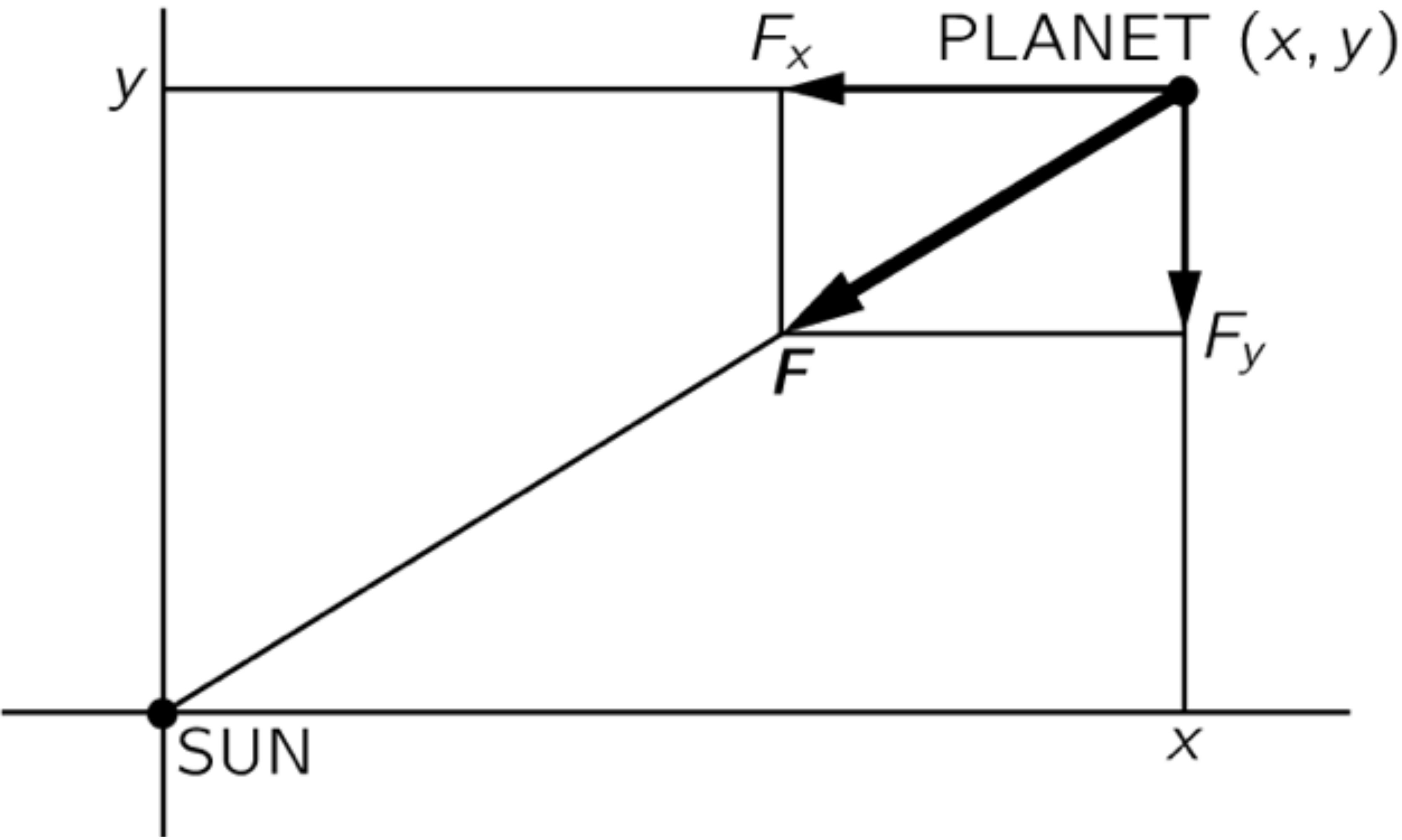
QUANTUM MECHANICS

Gravitação



Gravitação

$$\vec{F} = m\vec{a}$$



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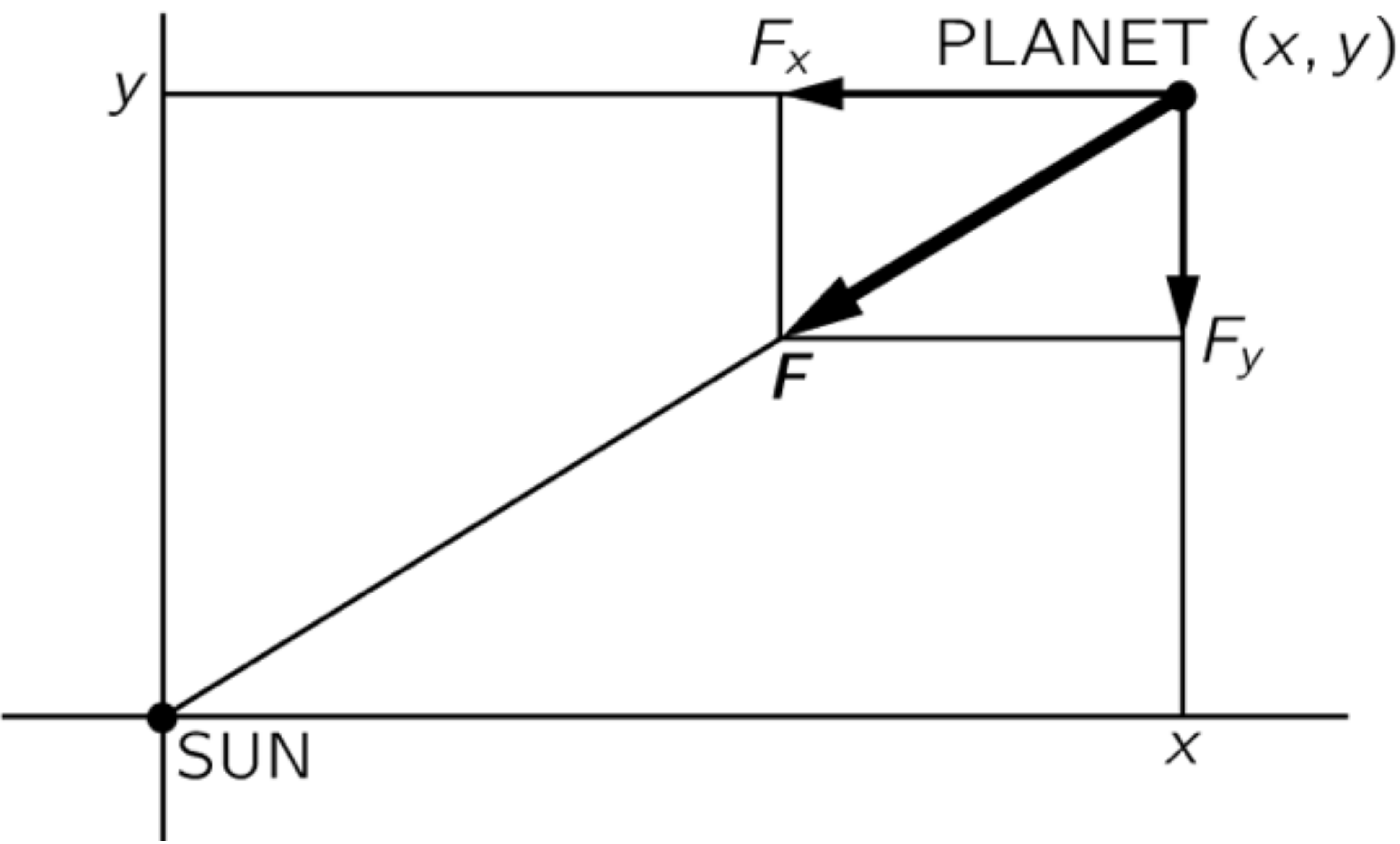

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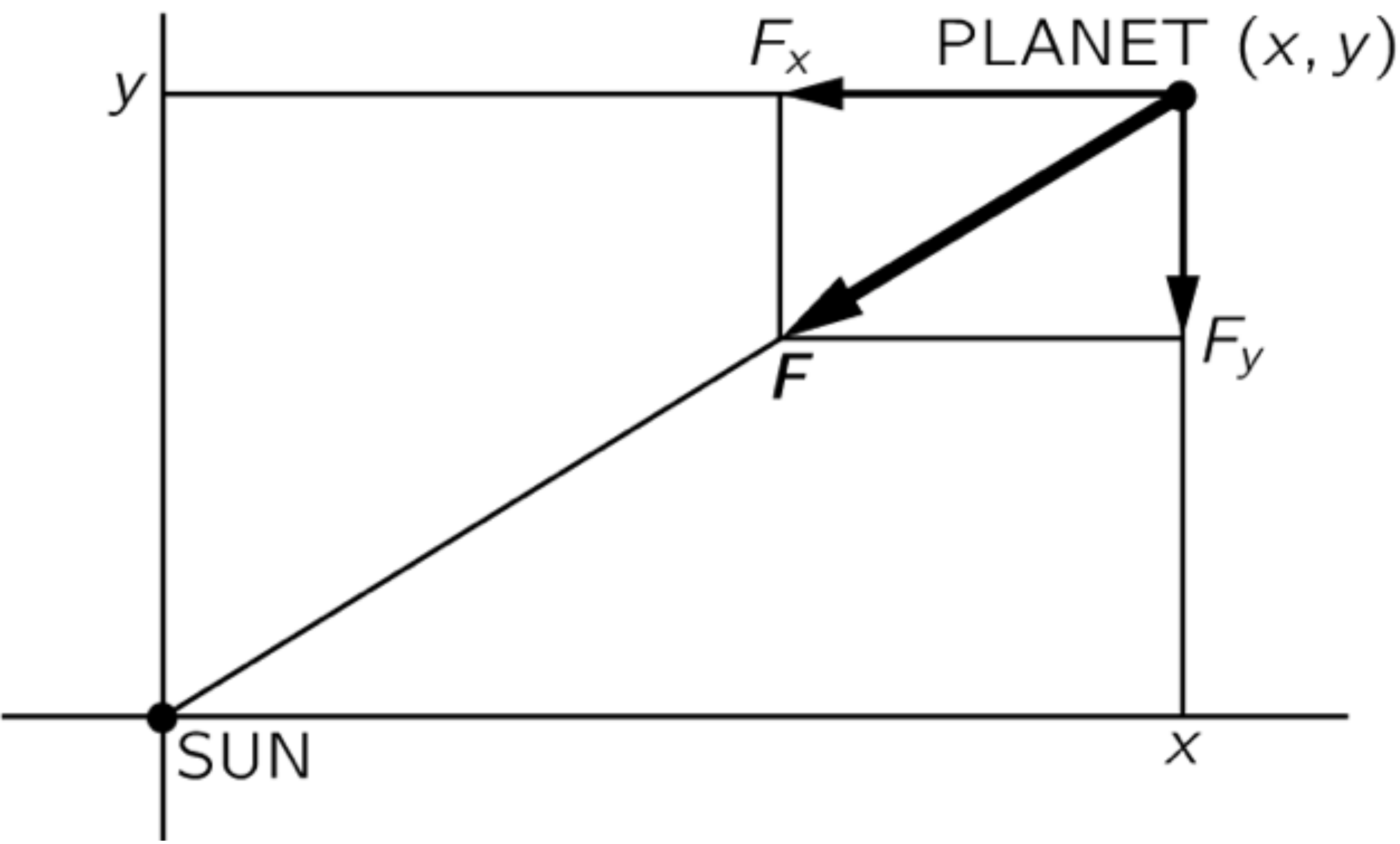

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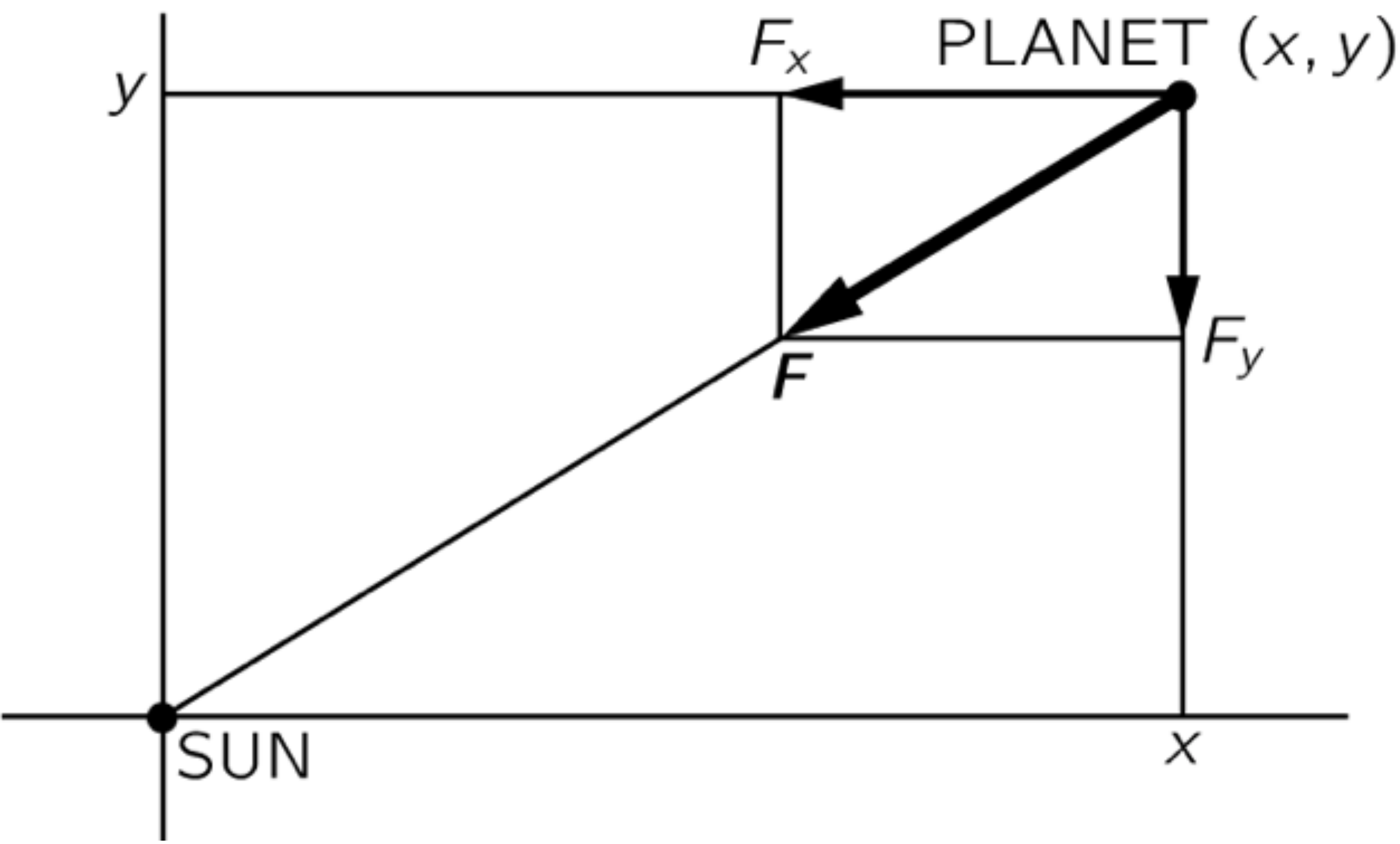

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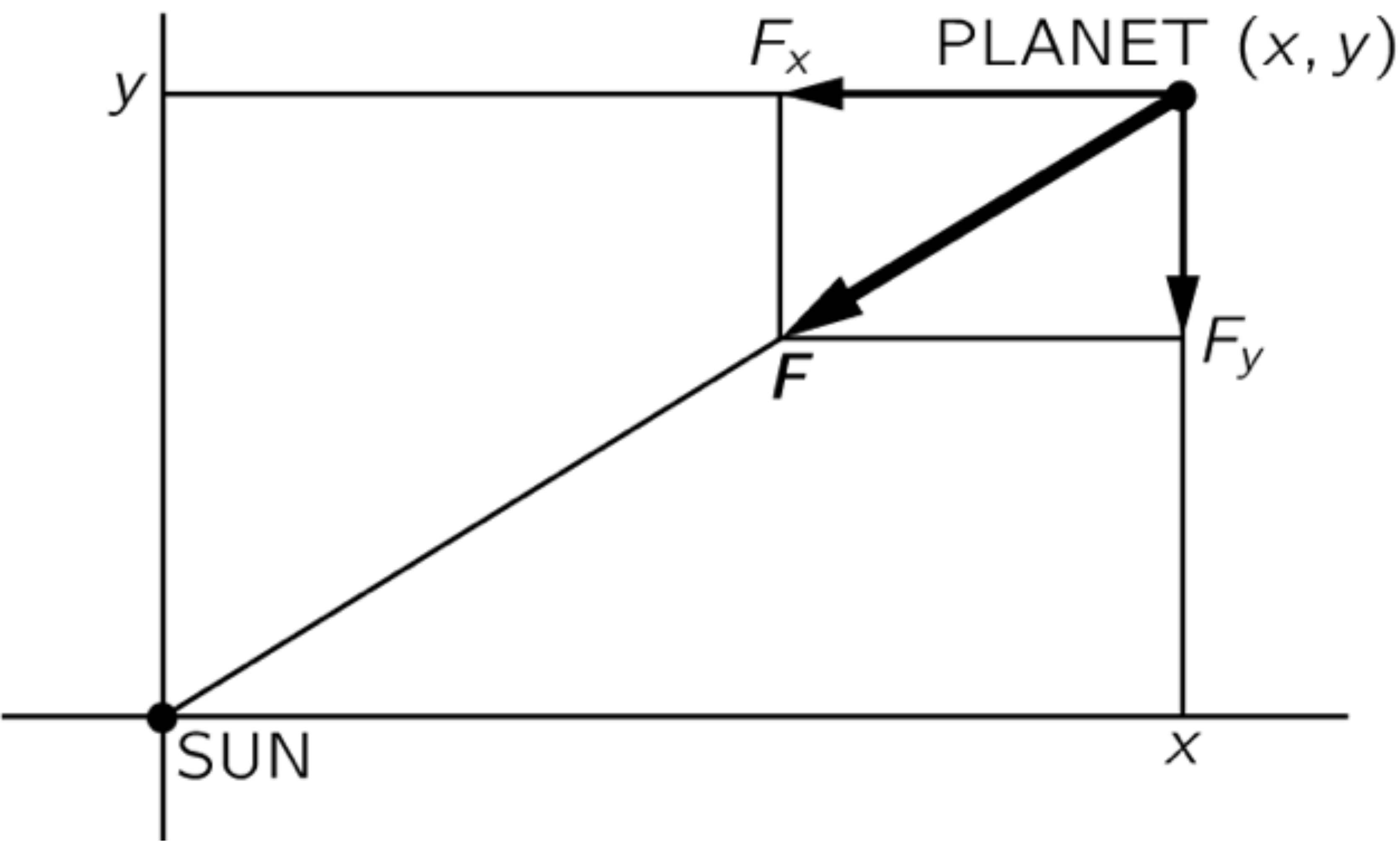

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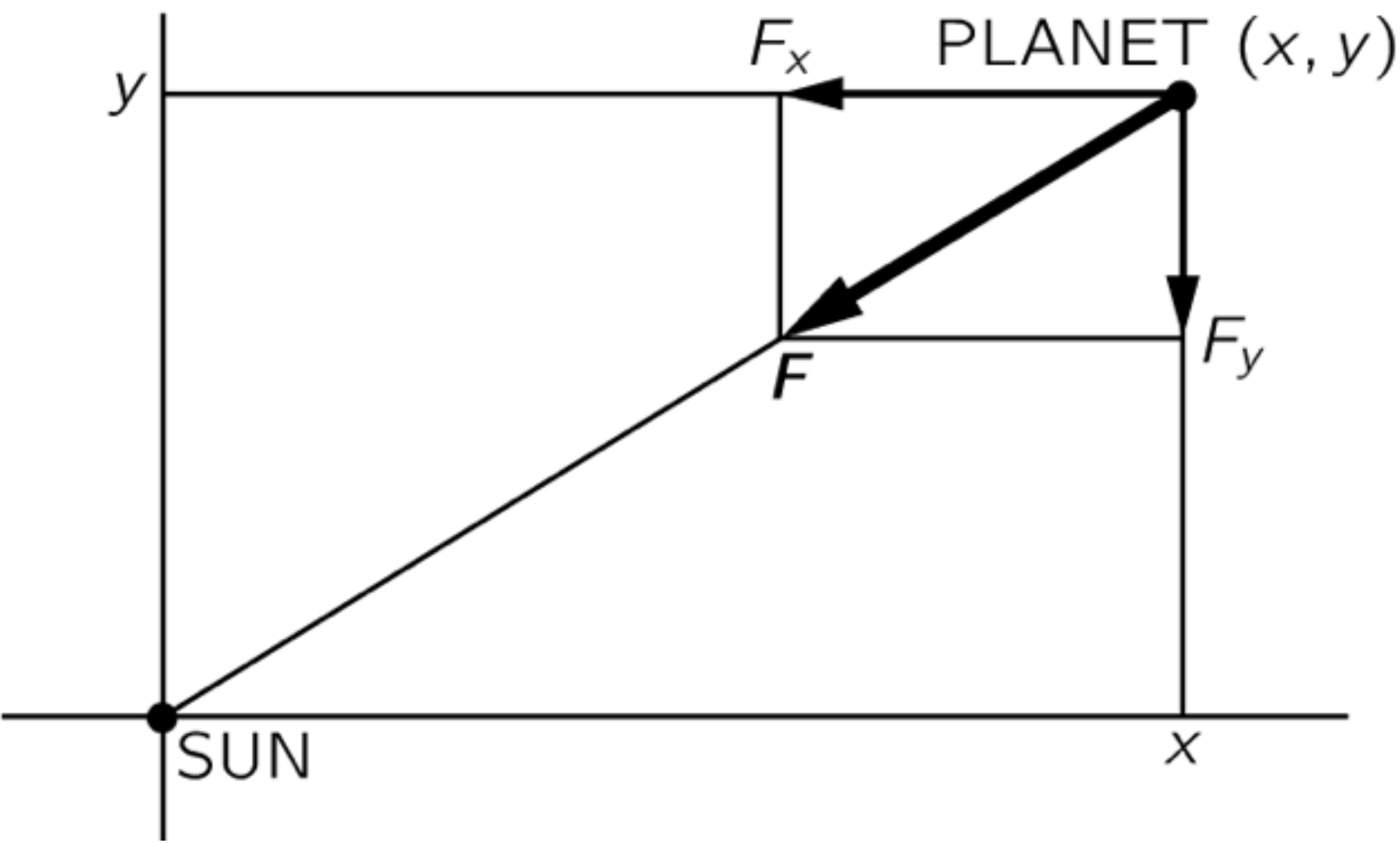

$$-\frac{GM}{|\vec{r}|^3}x = \frac{dv_x}{dt}$$

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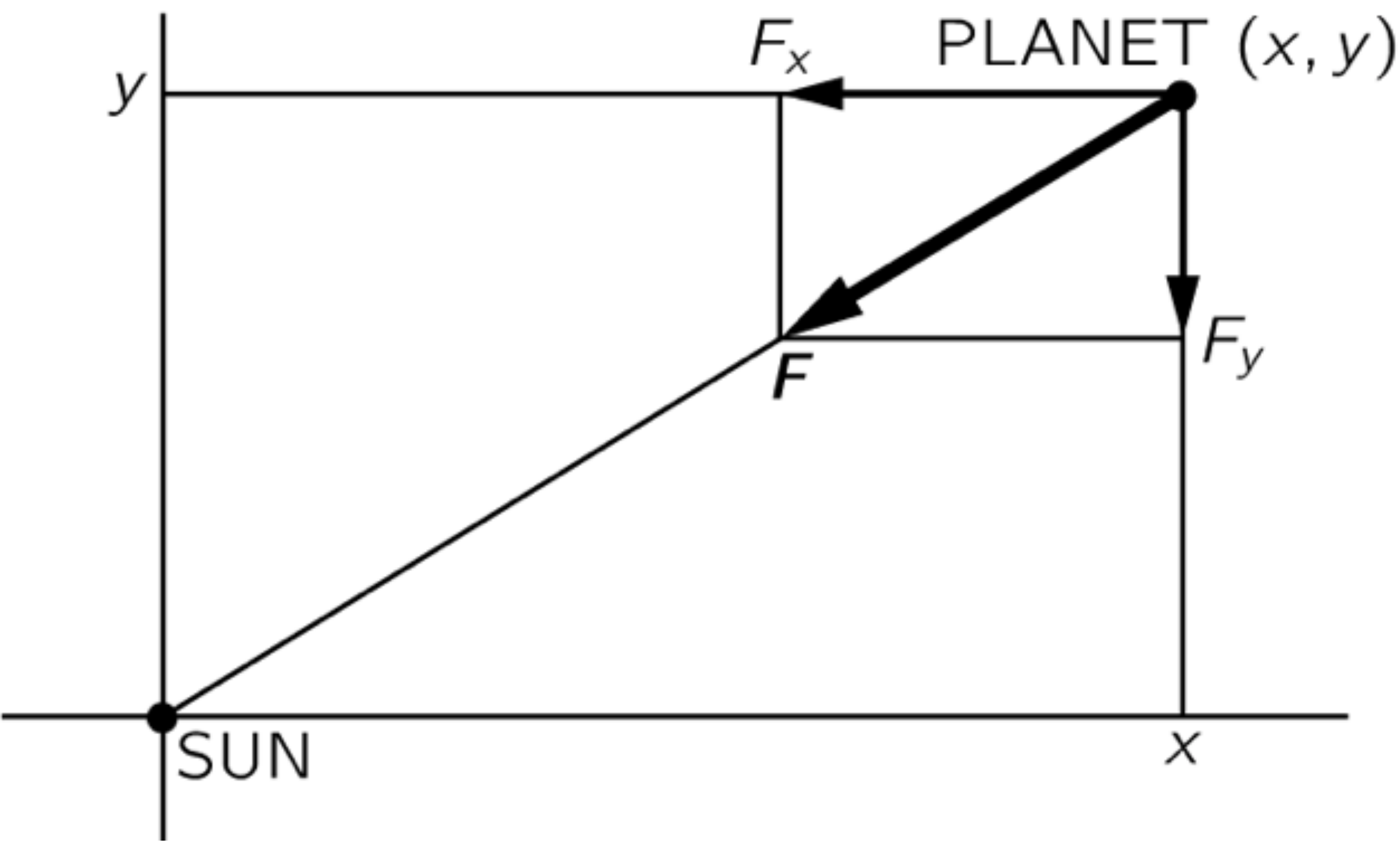

$$-\frac{GM}{|\vec{r}|^3}x = \frac{dv_x}{dt}$$

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Gravitação (solução numérica)

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$$x = x_0 + \Delta t v_x$$

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$$GM \equiv 1$$

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$$\frac{\Delta t}{|\vec{r}|^3}$$

$$v_x = v_{x0} - \frac{\Delta t}{|\vec{r}|^3} x$$

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Primórdios da computação
(o computador humano)

NACA High Speed Flight Station
"Computer Room"

http://en.wikipedia.org/wiki/Human_computer

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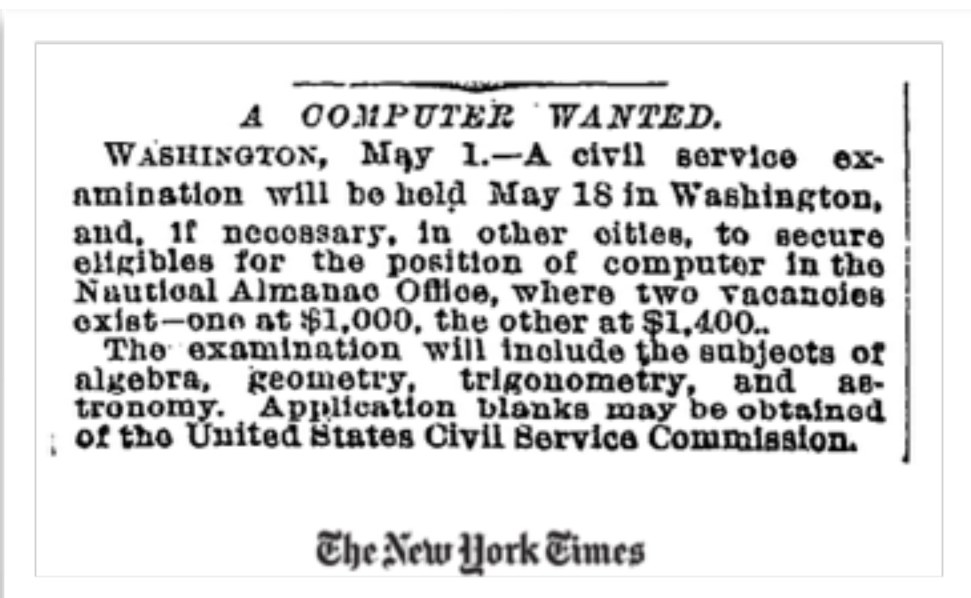

A COMPUTER WANTED.

WASHINGTON, May 1.—A civil service examination will be held May 18 in Washington, and, if necessary, in other cities, to secure eligibles for the position of computer in the Nautical Almanac Office, where two vacancies exist—one at $1,000, the other at $1,400.

The examination will include the subjects of algebra, geometry, trigonometry, and astronomy. Application blanks may be obtained of the United States Civil Service Commission.

The New York Times

NACA High Speed Flight Station
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Vamos colocar uma sonda em órbita!

- A partir da posição inicial e velocidade especificada, calcule a órbita da sonda e plote a sua trajetória ao longo do tempo.

$$\Delta t = 0.1 \qquad x_{inicial} = 0.5 \qquad y_{inicial} = 0.0$$

	G1	G2	G3	G4	G5	G6
$v_{x,inicial}$	0.0	0.0	0.0	0.0	-0.4	-0.6
$v_{y,inicial}$	1.3	1.6	1.4	1.65	1.7	1.6