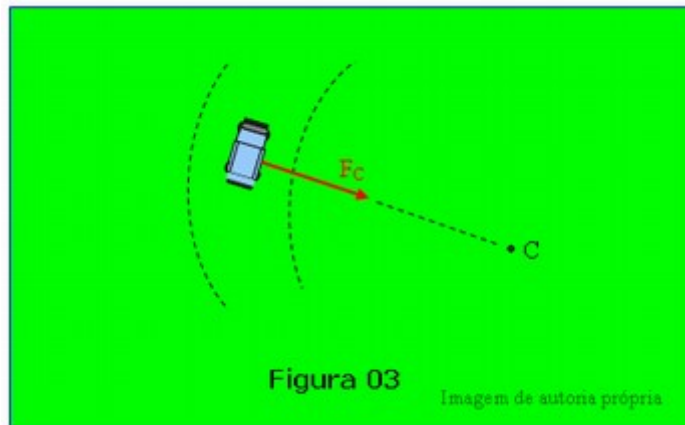
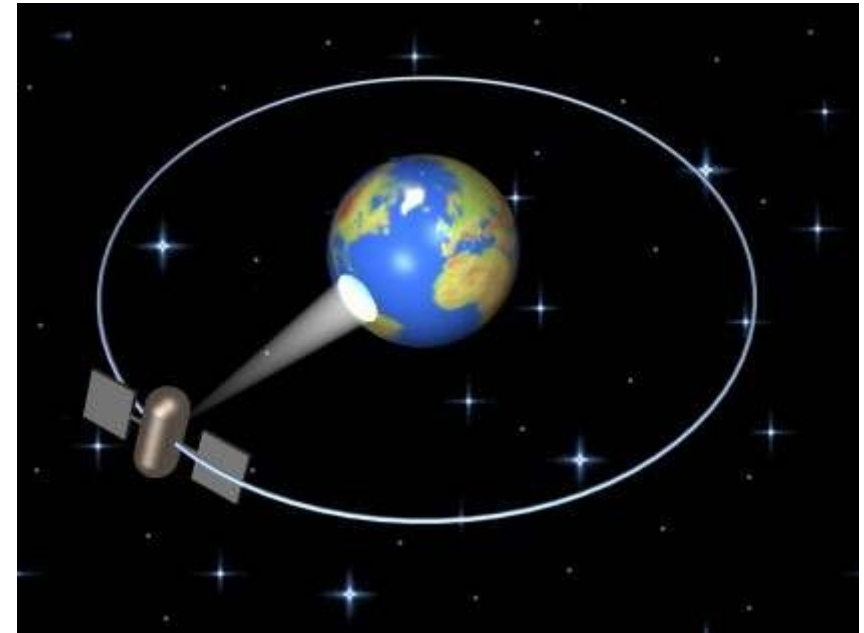
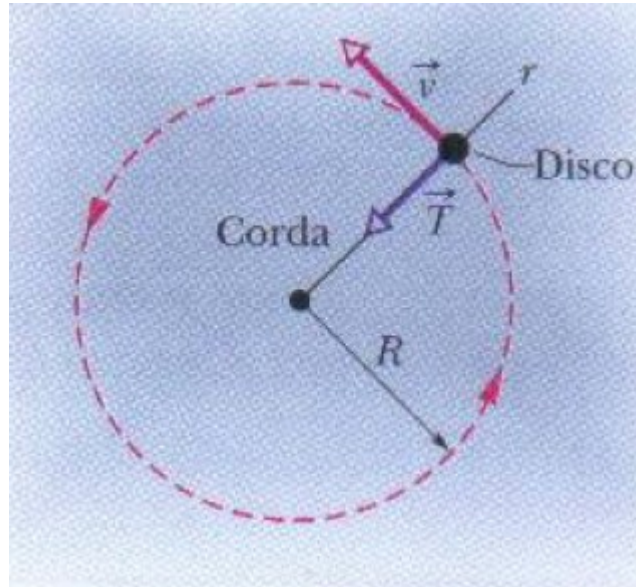
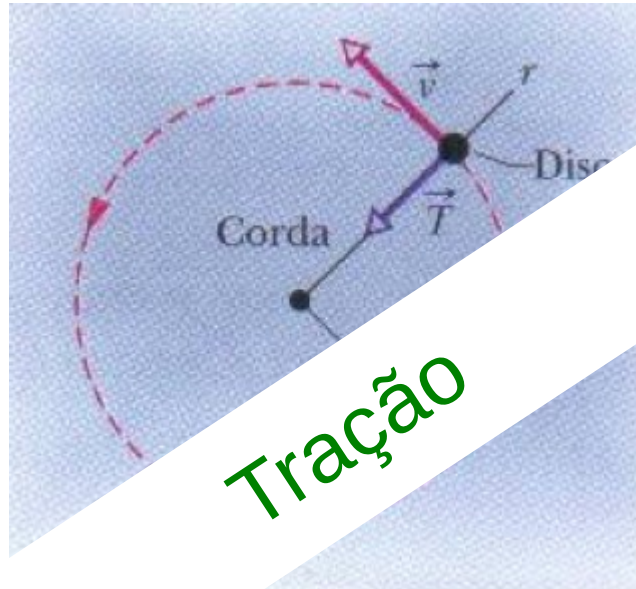


Dinâmica do Movimento Circular Uniforme



Qual é a grandeza que produz o MCU?

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E cadê a força centrípeta?

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A F_c não é um novo tipo de força, é simplesmente uma força resultante que age na linha radial do sistema.

A palavra centrípeta somente indica a orientação da força

1)

Tração

2)

Atrito

3)

Força Gravitacional

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De acordo com a segunda lei de Newton:

$$F = m \frac{v^2}{R} \quad (\text{módulo da força centrípeta}).$$

e **sempre** aponta para o centro do círculo

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A photograph of a vinyl record spinning on a turntable, with a glowing green disc floating above it. The record is illuminated with a green light, creating a circular glow. The disc is a bright yellow-green color and is positioned to the right of the record. The background is dark, making the glowing elements stand out.

Quais são as forças que agem sobre o corpo?

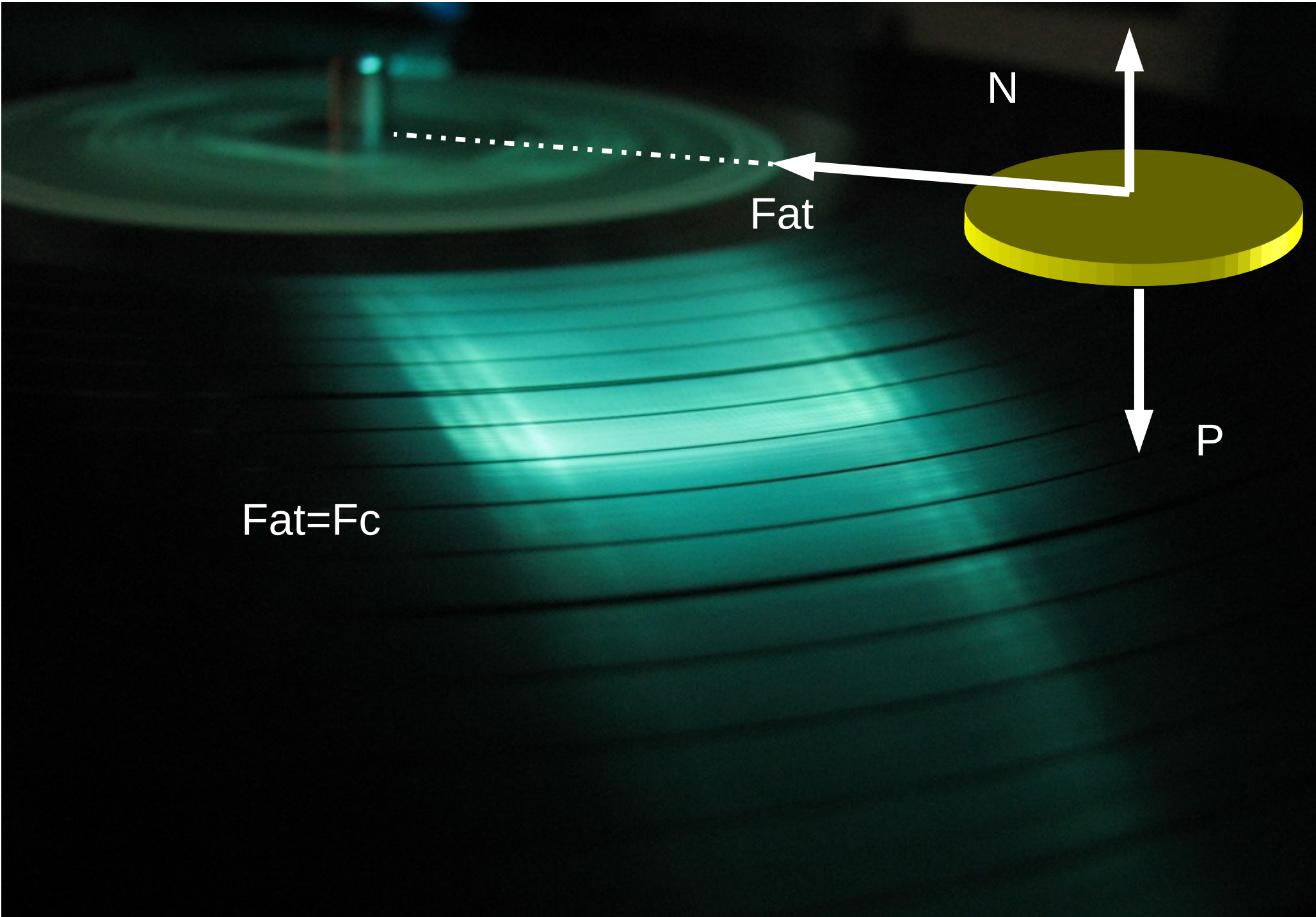
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$$F_{at} = F_c$$

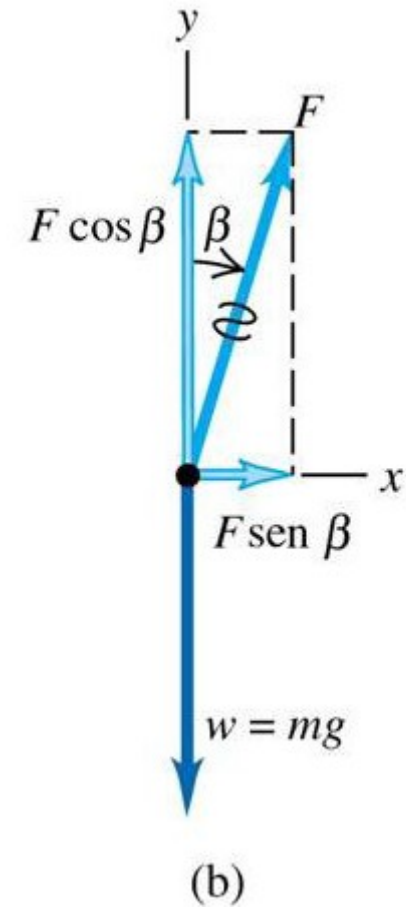
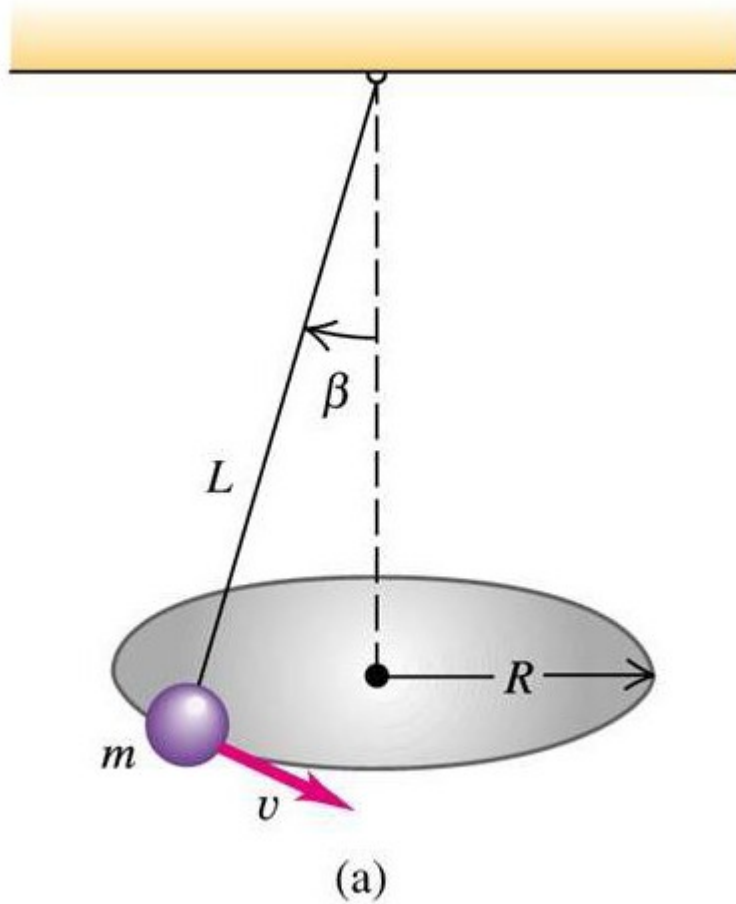
F_{at}

N

P



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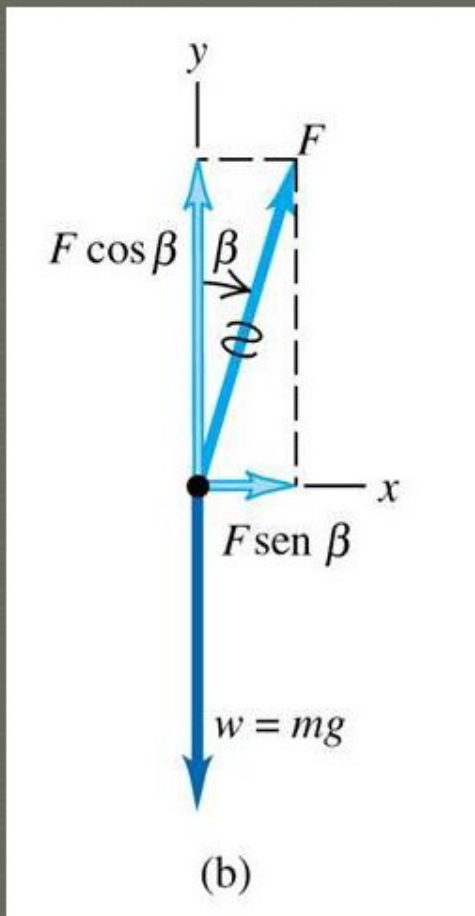


O pêndulo cônico

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O pêndulo cônico

$$\sum \mathbf{F} = \boldsymbol{\eta} + \mathbf{w} = m\mathbf{a}$$



Pêndulo

Forças em y :

$$\sum F_y = 0$$

$$F \cos \beta - w = 0$$

$$F = \frac{mg}{\cos \beta}$$

Forças em x :

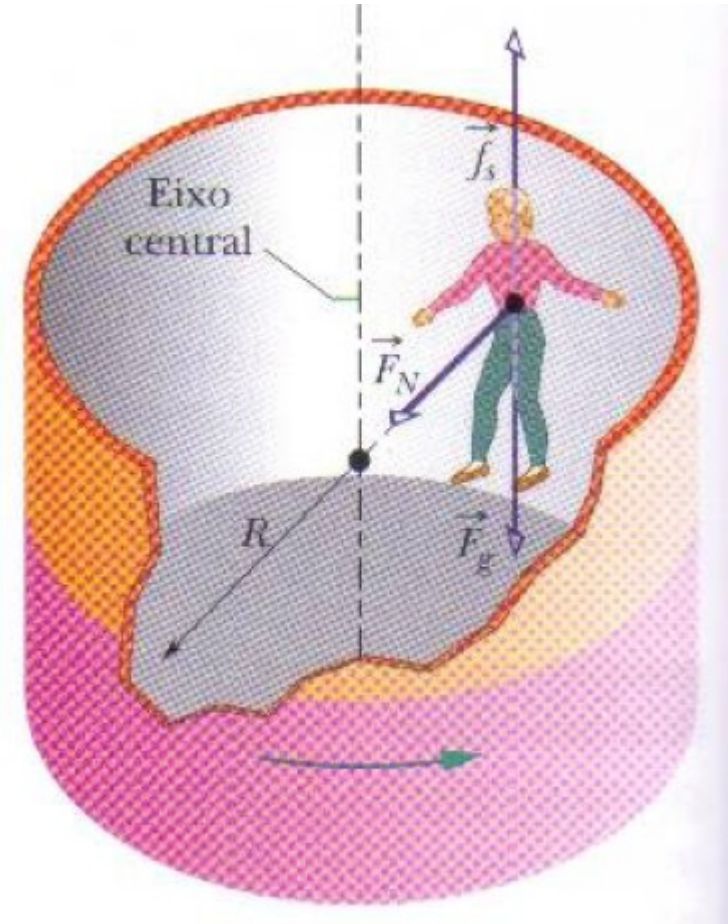
$$\sum F_x = ma_x$$

$$F \sin \beta = ma_c$$

$$\frac{mg}{\cos \beta} \sin \beta = m \frac{v^2}{r}$$

$$v = \sqrt{gr \tan \beta}$$

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O Rotor

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Forças em y:

$$\sum F_y = 0$$

$$f_s - F_g = 0$$

$$\mu_s F_N = mg$$

$$F_N = \frac{mg}{\mu_s}$$

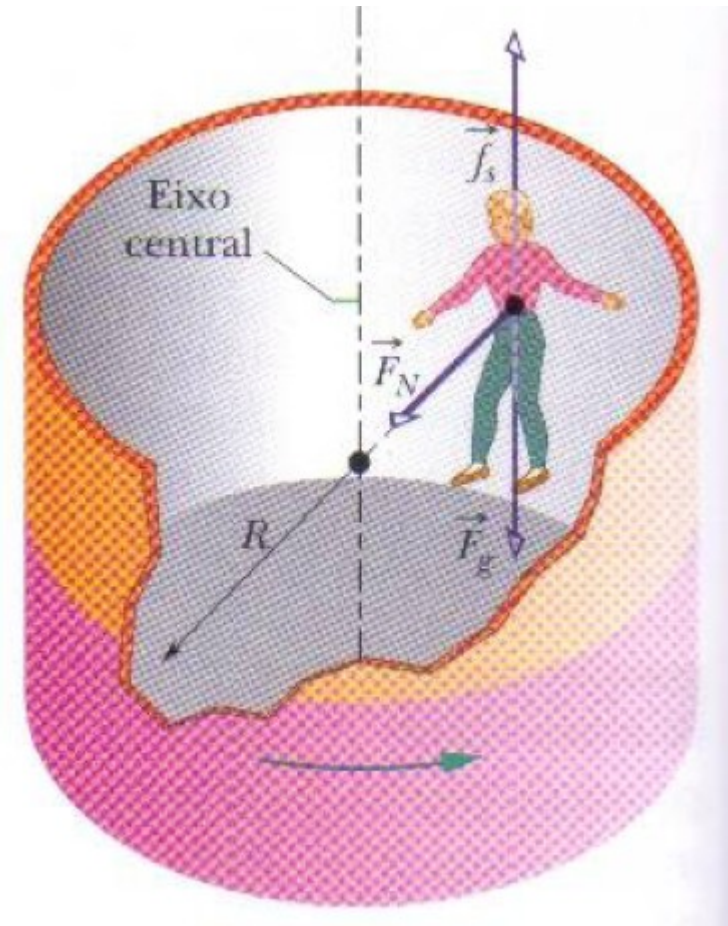
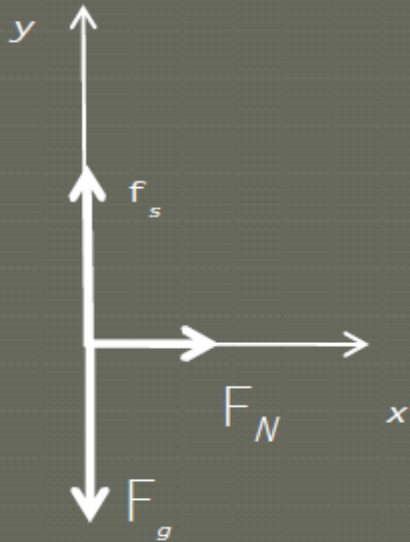
Forças em x:

$$\sum F_x = ma_x$$

$$F_N = ma_c$$

$$\frac{mg}{\mu_s} = m \frac{v^2}{R}$$

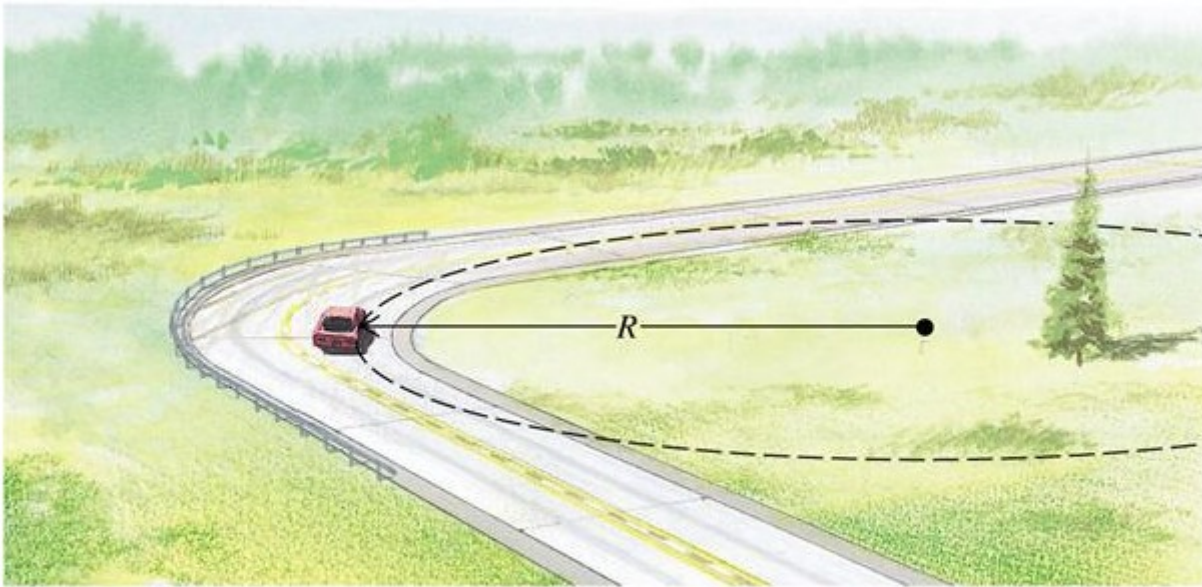
$$v = \sqrt{\frac{gR}{\mu_s}}$$



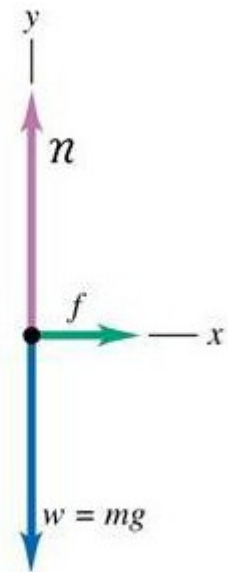
O Rotor

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Carro em curva plana



(a)

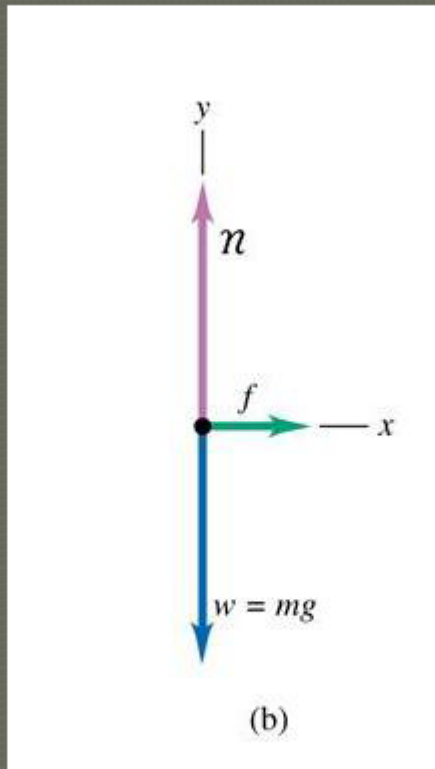


(b)

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Carro em curva plana

$$\sum \mathbf{F} = \boldsymbol{\eta} + \mathbf{w} + \mathbf{f} = m\mathbf{a}$$



Carro

Forças em y:

$$\sum F_y = 0$$

$$\eta - w = 0$$

$$\eta = mg$$

Forças em x:

$$\sum F_x = ma_x$$

$$f = ma_c$$

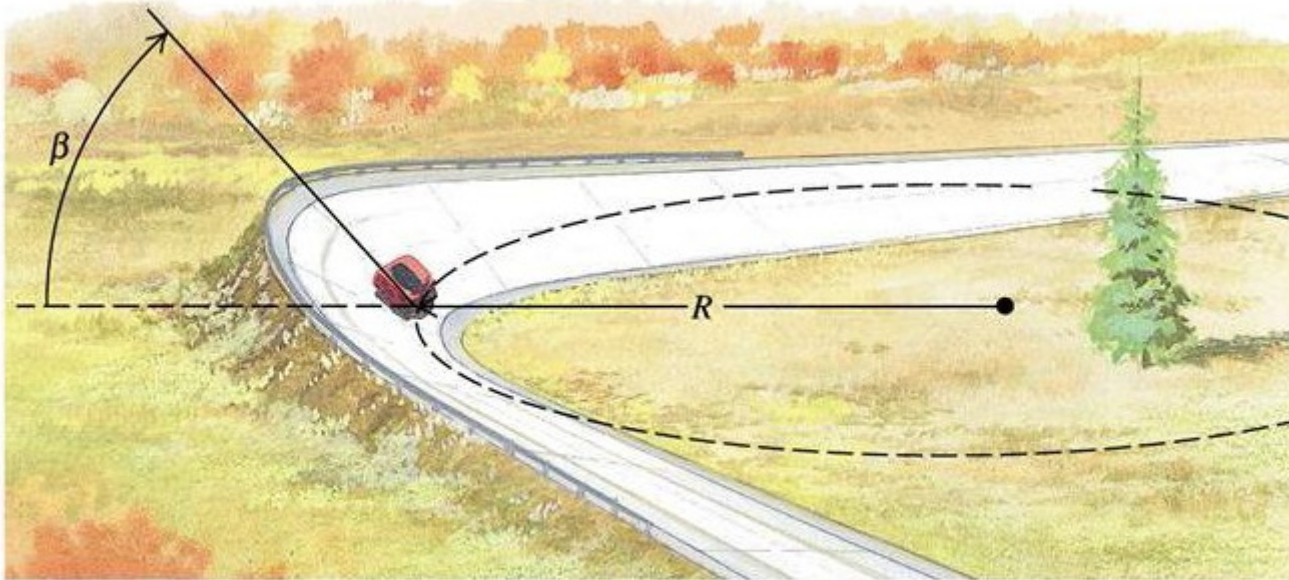
$$\mu_e \eta = m \frac{v^2}{R}$$

$$\mu_e mg = m \frac{v^2}{R}$$

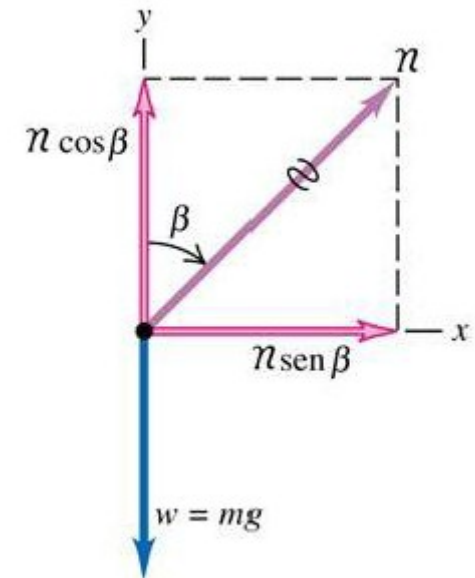
$$v = \sqrt{\mu_e g R}$$

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Carro em curva inclinada



(a)



(b)

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