No episódio anterior...

$$\phi = -\frac{\pi}{2}\ rad$$

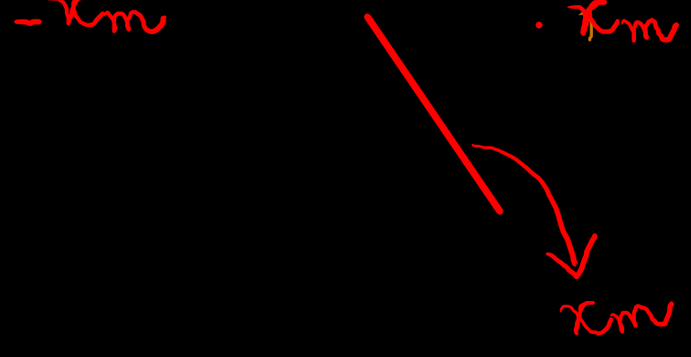
$$y_r(t) = y_m \cos\left(\frac{2\pi}{T}t - \frac{\pi}{2}\ rad\right)$$

$$=$$

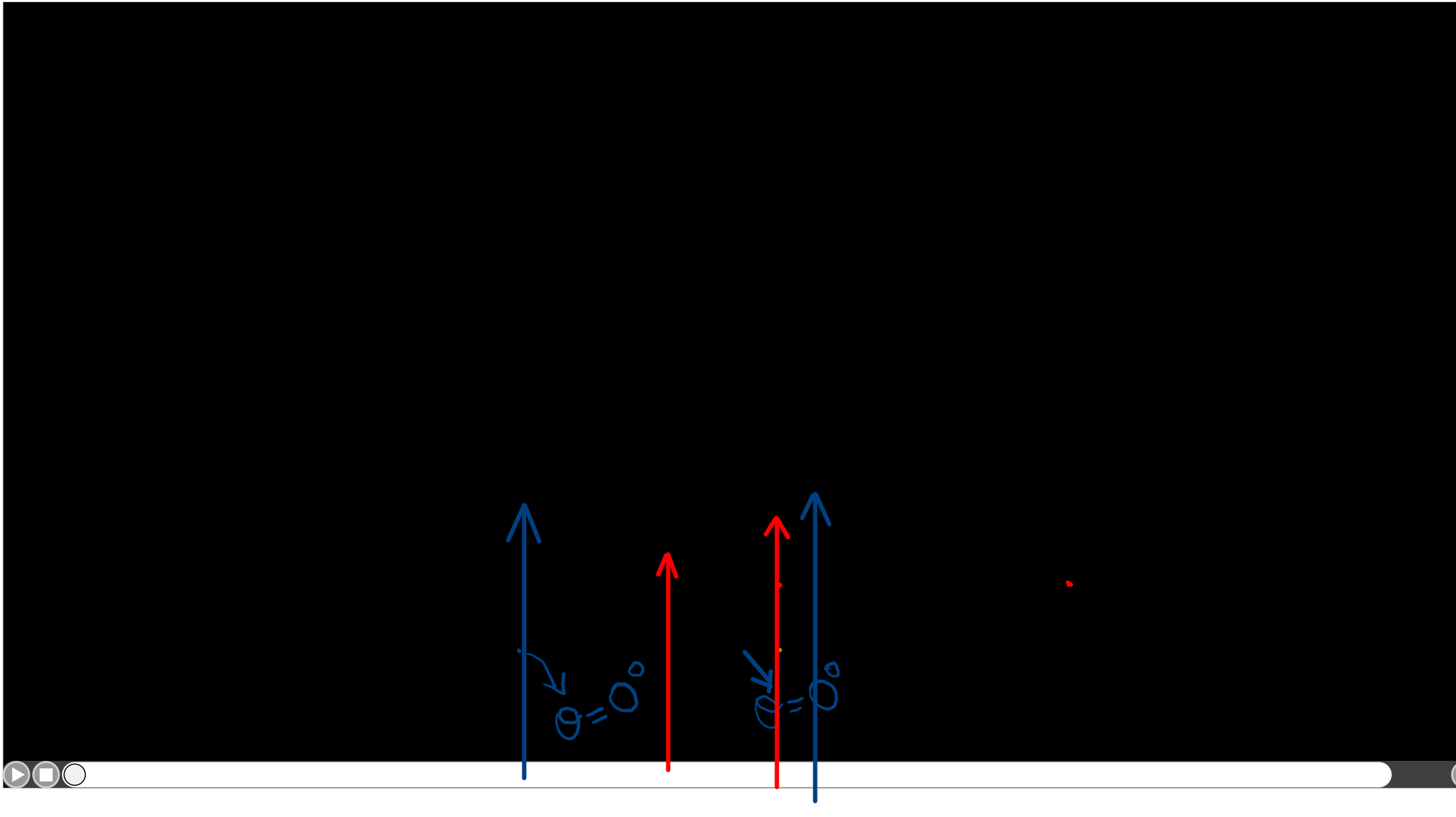
E se o movimento começar na extremidade direita?

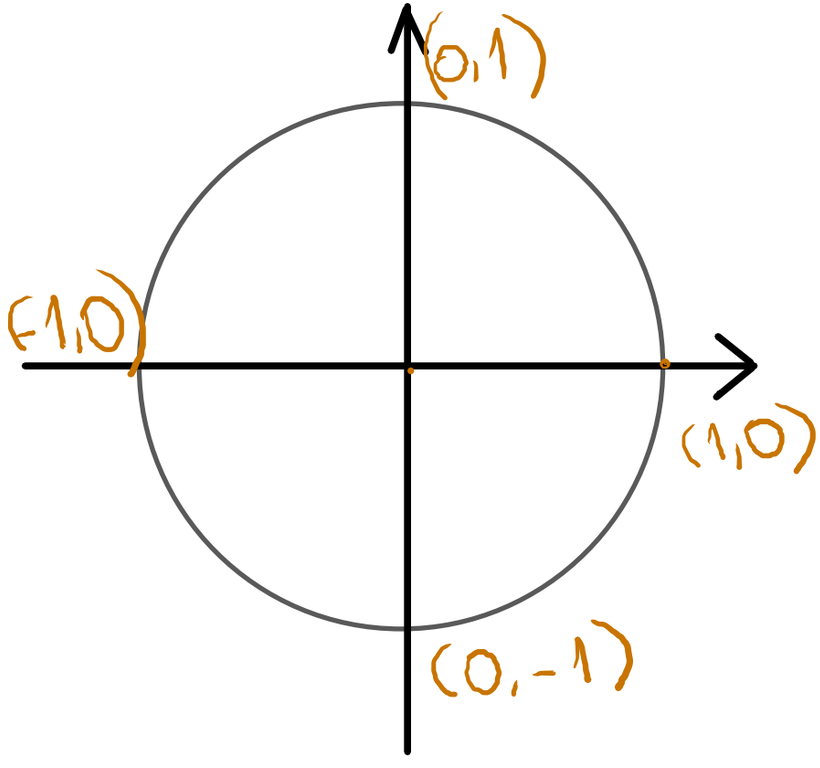
$$x(t) = x_m \cos\left(\frac{2\pi}{T} t\right)$$

$$\phi = 0$$



As funções seno e cosseno





Comprimento da circunferência:

$C = 2\pi R$. Se $R = 1$:

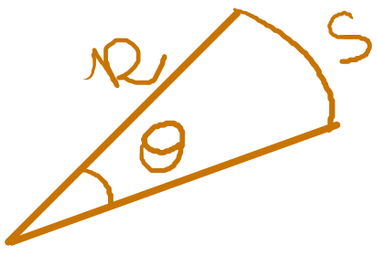
$C = 2\pi$.

Radiano: $360° = 2\pi$ rad

$$\theta(\text{rad}) = \theta(\text{graus}) \cdot \frac{\pi \text{ rad}}{180°}$$

$60° = ?$ rad

$135° = ?$ rad.



$$\theta(\text{rad}) = \frac{S}{R} = \frac{\text{comprimento}}{\text{comprimento}}$$

Radiano é adimensional!!!

- $\sin\left(\theta \pm \frac{\pi}{2}\,\text{rad}\right) = \sin\theta \cos\left(\frac{\pi}{2}\,\text{rad}\right)$ ($\cos\left(\frac{\pi}{2}\,\text{rad}\right) = 0$)

$$\pm \sin\left(\frac{\pi}{2}\,\text{rad}\right)\cos\theta = \pm\cos\theta$$ ($\sin\left(\frac{\pi}{2}\,\text{rad}\right) = 1$)

- $\sin(\theta \pm \pi\,\text{rad}) = \sin\theta\cos(\pi\,\text{rad}) \pm \sin(\pi\,\text{rad})\cos\theta$ ($\cos(\pi\,\text{rad}) = -1$, $\sin(\pi\,\text{rad}) = 0$)

$$= -\sin\theta$$

$$\cos\left(\theta - \frac{\pi}{2}\,\text{rad}\right) = \cos\theta \cos\left(\frac{\pi}{2}\right) + \sin\theta \sin\left(\frac{\pi}{2}\right)$$

$$\cos\left(\theta - \frac{\pi}{2}\right) = \sin\theta$$

Equação da posição em função do tempo no MHS

$$x(t) = x_m \cos\left(\left(\frac{2\pi}{T}\right)t + \phi\right)$$

ϕ: constante de fase

Frequência angular: $\omega = \frac{2\pi}{T}$ (rad/s).

$$\omega t\Big|_{t=T} = \omega T = 2\pi \text{ rad}$$

Mais sobre seno e cosseno

A carregar ...