The τ vs π argument is really long and interesting

It is mostly a notational argument

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Why use τ when there is π

Theorem

τ is great when dealing with circles

1. Fourier transforms

$$\hat{f}(\zeta) = \int_{-\infty}^{+\infty} f(x)e^{-2\pi i x \zeta} dx \tag{1}$$

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2. A simple pendulum

$$T \approx 2\pi\sqrt{\frac{L}{g}} \tag{2}$$