



plot cos(x), 1-x²/2, x=-pi..pi

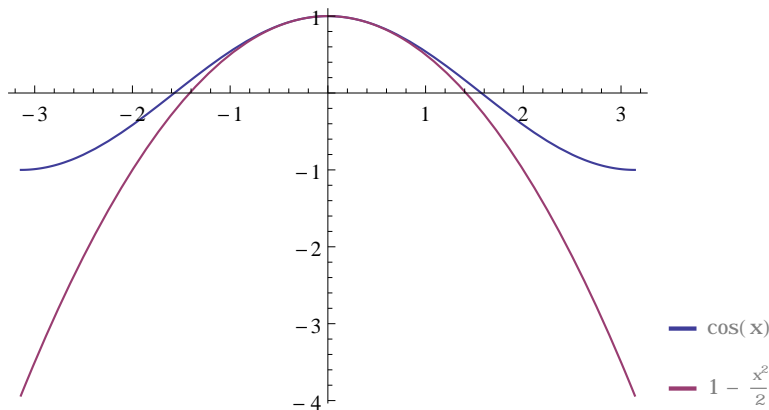


Input interpretation :

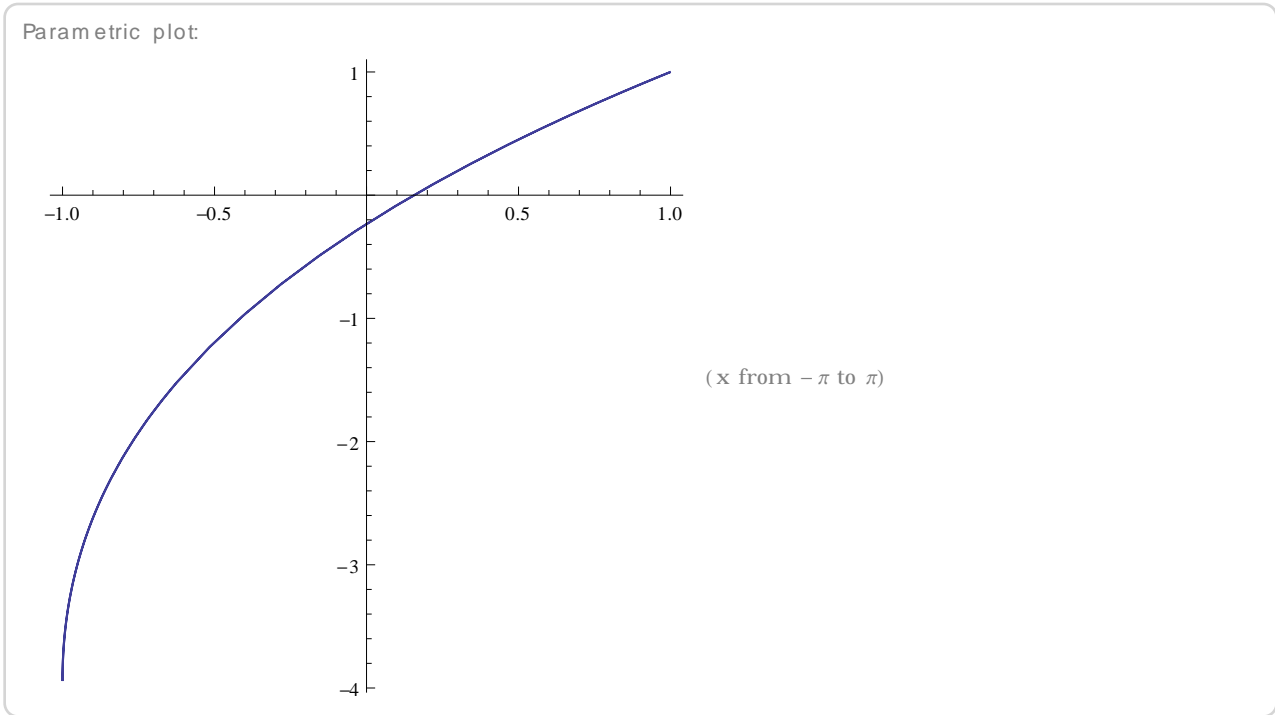
plot $\cos(x)$ $1 - \frac{x^2}{2}$ $x = -\pi$ to π



Plot:



Wolfram|Alpha: plot $\cos(x)$, $1-x^2/2$, $x=-\pi..pi$





max cos(x)-(1-x^2/2), when -pi<=x<=pi



Input interpretation :

maximize

function

$$\cos(x) - \left(1 - \frac{x^2}{2}\right)$$



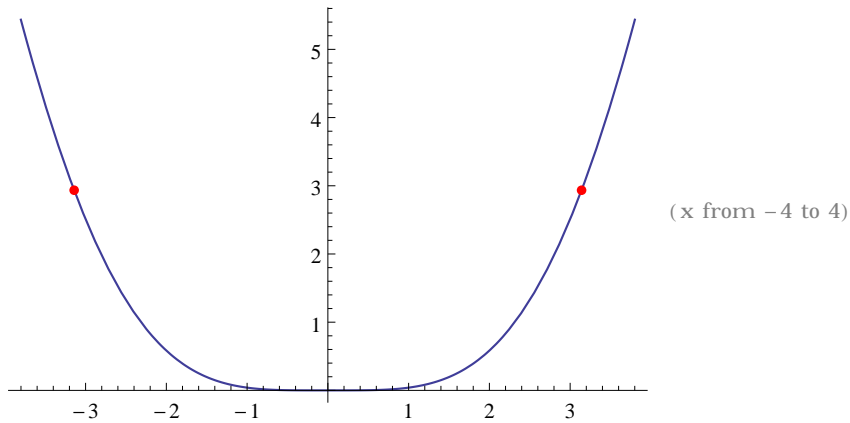
domain

$$-\pi \leq x \leq \pi$$

Global maxima :

$$\max\left\{\cos(x) - \left(1 - \frac{x^2}{2}\right) \mid -\pi \leq x \leq \pi\right\} = \frac{1}{2}(\pi^2 - 4) \text{ at } x = -\pi$$

Plot:





max cos(x)-(1-x^2/2), when -pi<=x<=pi

Examples Random

Input interpretation:

maximize	function	$\cos(x) - \left(1 - \frac{x^2}{2}\right)$
	domain	$-\pi \leq x \leq \pi$

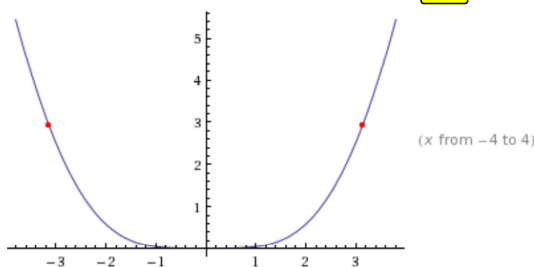
Global maxima:

$$\max\left(\cos(x) - \left(1 - \frac{x^2}{2}\right) \mid -\pi \leq x \leq \pi\right) = \frac{1}{2}(\pi^2 - 4) \text{ at } x = -\pi$$

$$\max\left(\cos(x) - \left(1 - \frac{x^2}{2}\right) \mid -\pi \leq x \leq \pi\right) = \frac{1}{2}(\pi^2 - 4) \text{ at } x = \pi$$

Approximate form

Plot:



Computed by Wolfram Mathematica

Give us your feedback:



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[cos\(x\)-\(1-x^2/2\) vs d\(cos\(x\)...](#)

[plot cos\(x\)-\(1-x^2/2\)](#)

[series of cos\(x\)-\(1-x^2/2\)wr...](#)

Related Links

[Cos \(in Mathematica\) »](#)

[Maximize \(in Mathematica\) »](#)



int cos(x)-(1-x^2/2),x=-pi..pi

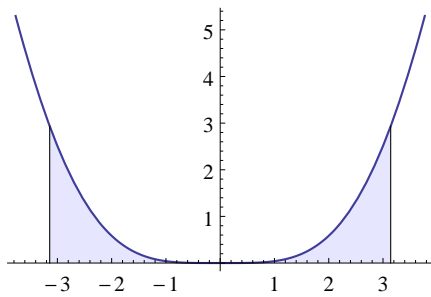


Definite integral:

$$\int_{-\pi}^{\pi} \left(\cos(x) - \left(1 - \frac{x^2}{2} \right) \right) dx = \frac{1}{3} \pi (\pi^2 - 6) \approx 4.05224$$



Visual representation of the integral:



Riemann sums:

left sum	$\frac{1}{3} \pi \left(\pi^2 \left(\frac{2}{n^2} + 1 \right) - 6 \right) = \left(\frac{\pi^3}{3} - 2\pi \right) + \frac{2\pi^3}{3n^2} + O\left(\left(\frac{1}{n}\right)^4\right)$
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(assuming n subintervals of equal length)