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WolframAlpha computational intelligence™

systems of equations calculator

NATURAL LANGUAGE MATH INPUT EXTENDED KEYBOARD EXAMPLES UPLOAD RANDOM

Computational Inputs:

Assuming a system of four equations | Use a system of three equations or more instead

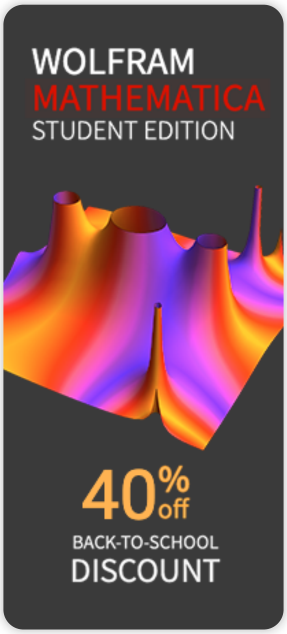
» equation 1: a=1*cos(x)+1*cos(y)

» equation 2: b=1*sin(x)+1*sin(y)

» equation 3: 0=0

» equation 4: 0=0

Compute




Input interpretation

| | |
|---|---|
| solve | $a = \cos(x) + \cos(y)$ |
| | $b = \sin(x) + \sin(y)$ |
| | True |
| | True |

Results

$$x = 2\left(\tan^{-1}\left(\frac{a}{\sqrt{-a(a+2)}}\right) + \pi c_2\right) \text{ and } y = 2\pi c_1 + \pi \text{ and } a + 2 \neq 0 \text{ and } b = -\sqrt{-a(a+2)} \text{ and } c_1 \in \mathbb{Z} \text{ and } c_2 \in \mathbb{Z}$$

$$x = 2\left(\tan^{-1}\left(\frac{2\,b - \sqrt{-a^4 - 2\,a^2\left(b^2 - 2\right) - b^2\left(b^2 - 4\right)}}{a^2 + 2\,a + b^2}\right) + \pi\,c_2\right)$$
and $y = 2\left(\tan^{-1}\left(\frac{\sqrt{-a^4 - 2\,a^2\left(b^2 - 2\right) - b^2\left(b^2 - 4\right)} + 2\,b}{a^2 + 2\,a + b^2}\right) + \pi\,c_1\right)$
and $a^2 + 2\,a + b^2 \neq 0$ and
$(a + 2)\left(a^2 + b^2\right) \neq b\sqrt{-a^4 - 2\,a^2\left(b^2 - 2\right) - b^2\left(b^2 - 4\right)}$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$$x = 2\left(\tan^{-1}\left(\frac{\sqrt{-a^4 - 2\,a^2\left(b^2 - 2\right) - b^2\left(b^2 - 4\right)} + 2\,b}{a^2 + 2\,a + b^2}\right) + \pi\,c_2\right)$$
and $y = 2\left(\tan^{-1}\left(\frac{2\,b - \sqrt{-a^4 - 2\,a^2\left(b^2 - 2\right) - b^2\left(b^2 - 4\right)}}{a^2 + 2\,a + b^2}\right) + \pi\,c_1\right)$
and $a^2 + 2\,a + b^2 \neq 0$ and
$a^3 + 2\,a^2 + b\left(\sqrt{-a^4 - 2\,a^2\left(b^2 - 2\right) - b^2\left(b^2 - 4\right)} + 2\,b\right) + a\,b^2 \neq 0$
and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$\frac{x - \pi}{2\,\pi} \notin \mathbb{Z}$ and $\tan\left(\frac{x}{2}\right) \neq 0$ and
$y = 2\,\pi\,c_1 - 2\tan^{-1}\left(\cot\left(\frac{x}{2}\right)\right)$ and $a = 0$ and $b = 0$ and $c_1 \in \mathbb{Z}$

$x = 2\,\pi\,c_1 + \pi$ and $y = 2\,\pi\,c_2 + \pi$ and $a = -2$ and $b = 0$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$x = 2\,\pi\,c_1 + \pi$ and $y = 2\left(\tan^{-1}\left(\frac{a}{\sqrt{-a\,(a + 2)}}\right) + \pi\,c_2\right)$ and
$\mathrm{Re}(a) < -2$ and $b = -\sqrt{-a\,(a + 2)}$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$x = 2\,\pi\,c_1 + \pi$ and $y = 2\,\pi\,c_2 - 2\tan^{-1}\left(\frac{a}{\sqrt{-a\,(a + 2)}}\right)$
and $\mathrm{Re}(a) < -2$ and $b = \sqrt{-a\,(a + 2)}$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$x = 2\,\pi\,c_1 + \pi$ and $y = 2\left(\tan^{-1}\left(\frac{a}{\sqrt{-a\,(a + 2)}}\right) + \pi\,c_2\right)$ and $\mathrm{Im}(a) \neq 0$
and $\mathrm{Re}(a) = -2$ and $b = -\sqrt{-a\,(a + 2)}$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$x = 2\,\pi\,c_1 + \pi$ and $y = 2\,\pi\,c_2 - 2\tan^{-1}\left(\frac{a}{\sqrt{-a\,(a + 2)}}\right)$ and $\mathrm{Im}(a) \neq 0$
and $\mathrm{Re}(a) = -2$ and $b = \sqrt{-a\,(a + 2)}$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$x = 2\,\pi\,c_1 + \pi$ and $y = 2\left(\tan^{-1}\left(\frac{a}{\sqrt{-a\,(a + 2)}}\right) + \pi\,c_2\right)$ and
$\mathrm{Re}(a) > -2$ and $b = -\sqrt{-a\,(a + 2)}$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$x = 2\,\pi\,c_1 + \pi$ and $y = 2\,\pi\,c_2 - 2\tan^{-1}\left(\frac{a}{\sqrt{-a\,(a + 2)}}\right)$
and $\mathrm{Re}(a) > -2$ and $b = \sqrt{-a\,(a + 2)}$ and $c_1 \in \mathbb{Z}$ and $c_2 \in \mathbb{Z}$

$\tan^{-1}(x)$ is the inverse tangent function

$\mathbb{Z}$ is the set of integers

$\cot(x)$ is the cotangent function

$\text{Re}(z)$ is the real part of $z$

$\text{Im}(z)$ is the imaginary part of $z$

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