



Web 3.0 w praktyce

Pojęcia Web 3.0

- sztuczna inteligencja
- wyszukiwanie semantyczne
- zdanie naturalne

Cechy Web 3.0

- sieć inteligentna
- otwartość
- realizacja indywidualnych potrzeb informacyjnych
- wyższa interaktywność i realność przekazów

WolframAlpha

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Czym jest WolframAlfa

- wyszukiwarka stworzona przez amerykańską firmę Wolfram Alpha LLC w 2009 r.
- wykonuje obliczenia, przedstawia dane statystyczne, rozwiązuje równania
- przydatna dla uczniów, studentów, inżynierów
- odpowiada na pytania zadane w języku naturalnym np. How old was Queen Elizabeth II in 1974?, Where was Maria Curie born?

Założenia WolframAlfa

- objąć możliwie jak najwięcej obszarów wiedzy
- przełożyć ją na język komputerowy
- projekt długoterminowy
- podać wynik w postaci: wzoru, tabeli, wykresu, zestawienia, grafiki i modelu trójwymiarowego

Zapis wielomianu 4 stopnia

$$x^4 + 3x^2 + 4x + 5 = 0$$

w postaci:

- wzoru
- rozwiązania
- obrazu rozwiązań równania na płaszczyźnie zespolonej

$$x^4+3x^2+4x+5=0$$



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Related Queries

= plot arctan((x^4+3...

= solve a x^2 + b x +...

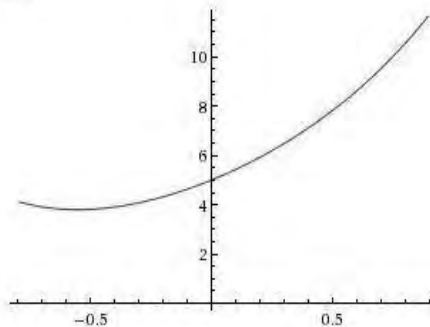
= plot log((x^4+3 x^...

= fundamental theorem...

Input:

$$x^4 + 3x^2 + 4x + 5 = 0$$

Plot:



Alternate form:

$$x(x^3 + 3x + 4) + 5 = 0$$

Complex solutions:

Approximate forms

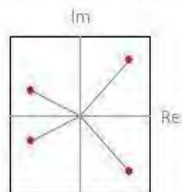
$$x = \frac{1}{2}(i - \sqrt{-5 + 8i})$$

$$x = \frac{1}{2}(-i - \sqrt{-5 - 8i})$$

$$x = \frac{1}{2}(\sqrt{-5 - 8i} - i)$$

$$x = \frac{1}{2}(i + \sqrt{-5 + 8i})$$

Roots in the complex plane:



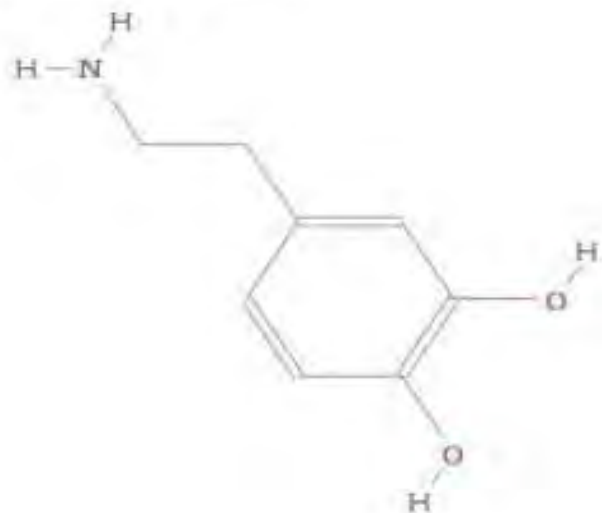
Schemat struktury dopaminy:

- model trójwymiarowy
- wzór strukturalny

Structure diagram:

Show all atoms

Show bond information



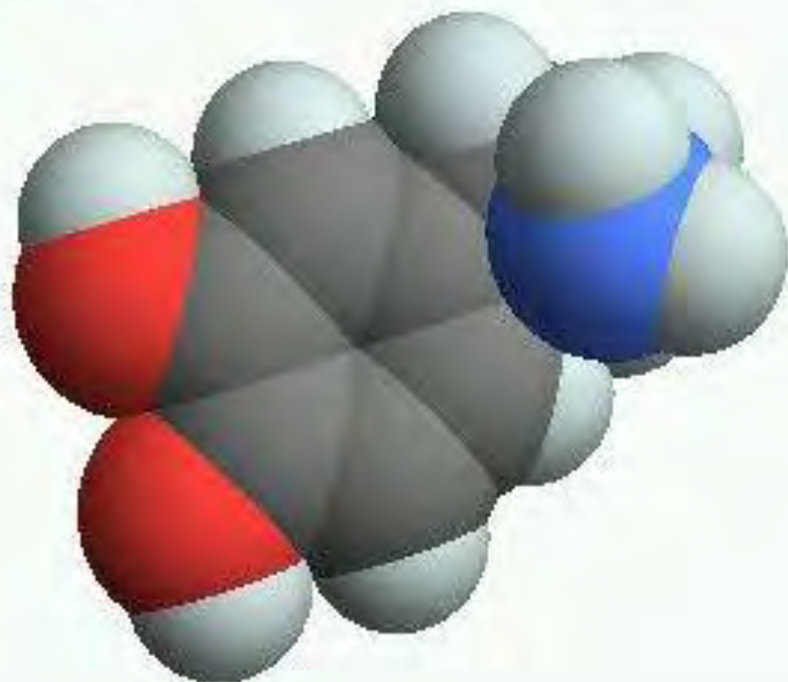
3D structure:

Show space filling



3D structure:

Show non-space filling



Enable interactivity 

Input:

$$w''(x) + w'(x) + w(x) = 0$$

ODE classification:

second-order linear ordinary differential equation

Alternate form:

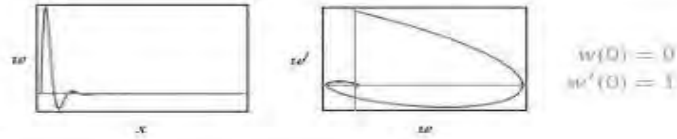
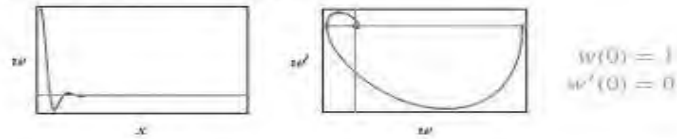
$$w''(x) = -w'(x) - w(x)$$

Differential equation solution:

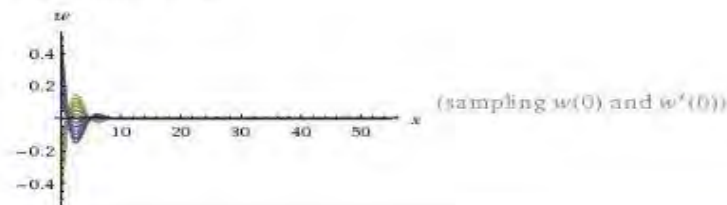
Show steps

$$w(x) = c_1 e^{-x/2} \sin\left(\frac{\sqrt{3}}{2} x\right) + c_2 e^{-x/2} \cos\left(\frac{\sqrt{3}}{2} x\right)$$

Plots of sample individual solutions:



Sample solution family:



Interactive differential equation solution plots:

(requires interactivity)

Enable interactivity

Possible Lagrangian:

$$\mathcal{L}(w', w, x) = \frac{1}{2} (e^x w'^2 - w^2 e^x)$$

**Zapis równania
różniczkowego
drugiego stopnia
 $w''(x) + w'(x) + w(x) = 0$**

Differential equation solutions:

Hide steps

$$w(x) = c_1 e^{-x/2} \sin\left(\frac{\sqrt{3}x}{2}\right) + c_2 e^{-x/2} \cos\left(\frac{\sqrt{3}x}{2}\right)$$

Solve $\frac{d^2 w(x)}{dx^2} + \frac{dw(x)}{dx} + w(x) = 0$:

Assume a solution will be proportional to $e^{\lambda x}$ for some constant λ .

Substitute $w(x) = e^{\lambda x}$ into the differential equation:

$$\frac{d^2}{dx^2}(e^{\lambda x}) + \frac{d}{dx}(e^{\lambda x}) + e^{\lambda x} = 0$$

Substitute $\frac{d^2}{dx^2}(e^{\lambda x}) = \lambda^2 e^{\lambda x}$ and $\frac{d}{dx}(e^{\lambda x}) = \lambda e^{\lambda x}$:

$$\lambda^2 e^{\lambda x} + \lambda e^{\lambda x} + e^{\lambda x} = 0$$

Factor out $e^{\lambda x}$:

$$(\lambda^2 + \lambda + 1)e^{\lambda x} = 0$$

Since $e^{\lambda x} \neq 0$ for any finite λ , the zeros must come from the polynomial:

$$\lambda^2 + \lambda + 1 = 0$$

Solve for λ :

$$\lambda = -\frac{1}{2} + \frac{i\sqrt{3}}{2} \text{ or } \lambda = -\frac{1}{2} - \frac{i\sqrt{3}}{2}$$

The roots $\lambda = -\frac{1}{2} \pm \frac{i\sqrt{3}}{2}$ give

$$w_1(x) = c_1 e^{\left(-\frac{1}{2} + \frac{i\sqrt{3}}{2}\right)x}, w_2(x) = c_2 e^{\left(-\frac{1}{2} - \frac{i\sqrt{3}}{2}\right)x}$$

as solutions, where c_1 and c_2 are arbitrary constants.

The general solution is the sum of the above solutions:

$$w(x) = w_1(x) + w_2(x) = c_1 e^{\left(-\frac{1}{2} + \frac{i\sqrt{3}}{2}\right)x} + c_2 e^{\left(-\frac{1}{2} - \frac{i\sqrt{3}}{2}\right)x}$$

Apply Euler's identity $e^{\alpha + i\beta} = e^{\alpha} \cos(\beta) + i e^{\alpha} \sin(\beta)$:

$$w(x) = c_1 \left(e^{-x/2} \cos\left(\frac{\sqrt{3}x}{2}\right) + i e^{-x/2} \sin\left(\frac{\sqrt{3}x}{2}\right) \right) + c_2 \left(e^{-x/2} \cos\left(\frac{\sqrt{3}x}{2}\right) - i e^{-x/2} \sin\left(\frac{\sqrt{3}x}{2}\right) \right)$$

Rearrange terms:

$$w(x) = (c_1 + c_2) e^{-x/2} \cos\left(\frac{\sqrt{3}x}{2}\right) + i(c_1 - c_2) e^{-x/2} \sin\left(\frac{\sqrt{3}x}{2}\right)$$

Redefine $c_1 + c_2$ as c_1 and $i(c_1 - c_2)$

as c_2 , since these are arbitrary constants:

Rozwinięcie równania

Zdanie w języku naturalnym:

*Kto był trzecim prezydentem Stanów
Zjednoczonych?*

who was the third president of USA?



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Related Queries

- = bordering countries...
- = 3rd president of Un...
- = prime minister of U...
- = Gini index of Unite...

Input interpretation:

United States President 3rd

Result:

Thomas Jefferson

Basic information:

official position	President (3 rd)
country	United States
political affiliation	Democrat–Republican
start date	1801–03–04 (211 years 19 days ago)
end date	1809–03–04 (203 years 19 days ago)
duration of leadership	8 years

Sequence:

More

March 1817 to March 1825 (8 years)	James Monroe (Democrat–Republican)
March 1809 to March 1817 (8 years)	James Madison (Democrat–Republican)
March 1801 to March 1809 (8 years)	Thomas Jefferson (Democrat–Republican)
March 1797 to March 1801 (4 years)	John Adams (Federalist)

Koniec?

The image shows the classic Google logo in its multi-colored, 3D-rendered font. The letters are: 'G' (blue), 'O' (red), 'O' (yellow), 'g' (blue), 'l' (green), and 'e' (red). A small 'TM' trademark symbol is located to the right of the final 'e'. The logo is centered on a white rectangular background.

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- skupia się na maksymalnie relewantnych wynikach zapytań
- dąży do wprowadzenia wyszukiwania semantycznego

Wyszukiwarki semantyczne

- True Knowledge
(<http://www.trueknowledge.com/>)
- Simple Knowledge Organization Systems
(<http://www.w3.org/2004/02/skos/>)
- Freebase (<http://www.freebase.com/>)
- Twine (<http://www.evri.com/>)
- Baidu Box Computing
(<http://boxcomputing.baidu.com/>)