ADDITIONAL CAS FUNCTIONS

Functions and graphs

`two_points(x1,y1,x2,y2)`

$$\text{two\_points}(-2, 4, 2, 0)$$
$$\rightarrow \text{equation: y=}2 - x$$
$$\rightarrow \text{midpoint: } (0, 2)$$
$$\rightarrow \text{length: } 4\sqrt{2}$$

`stationary(f(x),x)`

$$\text{stationary}(x^4 - 2x^2, x)$$
$$\rightarrow \begin{bmatrix} x & -1 & 0 & 1 \\ y & -1 & 0 & -1 \end{bmatrix}$$

Complex numbers

`cis(x)`

$$\text{cis}(\frac{\pi}{6})$$
$$\rightarrow \frac{\sqrt{3}}{2} + \frac{1}{2}i$$

`to_polar(z)`

$$\text{to\_polar}(5 + 5\sqrt{3}i)$$
$$\rightarrow 10\text{cis}(\frac{\pi}{3})$$

Geometry

`circle_line(cx,cy,r,l)`

$$\text{circle\_line}(2, 1, 3, 2x)$$
$$\rightarrow \text{pizza1: } 9.96$$
$$\rightarrow \text{pizza2: } 18.31$$
$$\rightarrow \text{triangle: } 7.2$$

Vectors

`angle_between(v1, v2)`

$$\text{angle\_between}(\begin{bmatrix} 1 & 0 \end{bmatrix}, \begin{bmatrix} 1 & \sqrt{3} \end{bmatrix})$$
$$\rightarrow \frac{\pi}{3}$$

`scalar_resolute(v1,v2)`

$$\text{scalar\_resolute}(\begin{bmatrix}1 & 2\end{bmatrix}, \begin{bmatrix}3 & 4\end{bmatrix})$$
$$\to \frac{11}{5}$$

`vector_resolute(v1,v2)`

$$\text{vector\_resolute}(\begin{bmatrix}1 & 0\end{bmatrix}, \begin{bmatrix}2 & 1\end{bmatrix})$$
$$\to \begin{bmatrix}\frac{4}{5} & \frac{2}{5}\end{bmatrix}$$