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# 1 symbols

## 1.1 detixify

detixify is a tool that matches your drawings to latex symbols.

# 2 equations

## 2.1 integrals

$$\int_{-1}^1 \sqrt{(1+r) * K} * \frac{3}{2} \cdot r^2 dr = \frac{3}{2} \cdot \sqrt{K} \int_{-1}^1 \sqrt{(1+r)} \cdot r^2 dr =$$

## 2.2 sums

$$f(n) = \sum_{i=1}^n i^k = 1^k + 2^k + \dots + n^k = O(N^k) < O(2^N)$$

# 3 matrices

## 3.1 square matrix

$$\begin{bmatrix} 0,0 & 5,2 & 3,3 \\ 2,4 & 3,3 & 5,1 \end{bmatrix}$$

## 3.2 parenthesis matrix

$$\begin{pmatrix} 0,0 & 5,2 & 3,3 \\ 2,4 & 3,3 & 5,1 \end{pmatrix}$$

## 4 multi line equations

### 4.1 plain

$$\nabla L(x, y, z; \lambda_1, \lambda_2) = (0, 0) \Rightarrow \left(-\frac{1}{x+3} + \lambda_1 + \lambda_2, -\frac{1}{y+6} + 2\lambda_1 - \lambda_2\right) = (0, 0)$$

$$x = \frac{1}{\lambda_1} + \frac{1}{\lambda_2} - 3$$

$$y = \frac{1}{2\lambda_1} - \frac{1}{\lambda_2} - 6$$

$$D(\lambda) = -\log\left(\frac{1}{\lambda_1} + \frac{1}{\lambda_2}\right) - \log\left(\frac{1}{2\lambda_1} - \frac{1}{\lambda_2}\right) + \lambda_1\left(\frac{1}{\lambda_1} + \frac{1}{\lambda_2} - 3 + \frac{1}{\lambda_1} - \frac{2}{\lambda_2} - 6\right) =$$

### 4.2 with crossing

$$x = B_1(y)$$

$$y = B_2(x)$$

$$x = 1 + \frac{5y}{2}$$

1

$$y = \alpha x$$

2

$$\alpha \cdot 1 + 2 \Rightarrow$$

$$y + \cancel{\alpha x} = \cancel{\alpha x} + \alpha + \frac{5y\alpha}{2} \Rightarrow$$

$$2y = 2\alpha + 5y\alpha$$

$$(2 - 5\alpha)y = 2\alpha \Rightarrow$$

$$y = \frac{2\alpha}{2 - 5\alpha} \Rightarrow$$

$$x = 1 + \frac{10\alpha}{4 - 10\alpha} \Rightarrow$$