LaTeX
Lab Quiz

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Contents

1 Equation

1.1 Lecture Codes

1.1.1 Normal Distribution

$$\mathcal{N}(x_i;\mu,\sigma) = \frac{1}{2\sqrt{\pi}\sigma} e^{-\frac{(x-\mu)^2}{2\sigma^2}} \tag{1}$$

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Look at equation (1)

1.1.2 Alignment Practice

This is another equation:

$$E = mc^2 \tag{2}$$

$$e^{\frac{a}{c}^b_d} \tag{3}$$

1.1.3 Proper use of *Bracket*

Fraction: $(\frac{\frac{a}{b}}{\frac{c}{d}})$
But we want to cover the total part. $\left(\frac{\frac{a}{b}}{\frac{c}{d}}\right)$

1.1.4 Piecewise function & Simplification

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases} \tag{4}$$

$$\begin{aligned} f(x) &= (x-1)(x+1) \\ &\quad + e^x \\ &= x^2 - 1 + e^x \end{aligned} \tag{5}$$

1.2 Online Solves

1.2.1 Vector

$$\vec{q_x} = \frac{2g_x}{k-1}\vec{b}_n, \qquad \vec{q_y} = \frac{2g_y}{m-1}\vec{v}_n, \qquad \vec{p}_{1m} = \vec{t}_n d - g_x\vec{b}_n - g_y\vec{v}_n$$

1.2.2 Nambu-Goto Action

$$S = -T \int \sqrt{-\det(g_{ab})}\, d\tau\, d\sigma \tag{6}$$

1.2.3 Stirling number of second kind

$$S(n,k) = \frac{1}{k!}\sum_{i=0}^{k}(-1)^{k-i}\binom{k}{i}i^n = \sum_{i=0}^{k}\frac{(-1)^{k-i}\,i^n}{(k-i)!i!} \tag{7}$$

1.2.4 Complex piecewise function

$$F_c(x,y) = \begin{cases} \frac{\partial^2 x^3 y^x}{\partial x^2} + \frac{\partial^2 \Gamma(x)\log(\tan y)}{\partial x \partial y} & \text{if x,y are real numbers} \\ \lim\limits_{Z\to e^{x^2y}} \sqrt{Z + \frac{a}{\sqrt{Z+\frac{1}{z+\ldots}}}} & \text{otherwise} \end{cases} \tag{8}$$

1.2.5 Eular Equation

$$e^{i\theta} = \cos\theta + i\sin\theta \tag{9}$$

if we put $\theta = \frac{\pi}{2}$ in equation (9),we get the following:

$$\begin{aligned} e^{i\frac{\pi}{2}} &= \cos\frac{\pi}{2} + i\sin\frac{\pi}{2} \\ &= 0 + i.1 \\ &= i \end{aligned}$$

2 Quiz

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \\ x & \text{if } x \geq 0 \end{cases} \tag{10}$$