Fira Math

Sans-serif font with Unicode math support

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2020/10/15 v0.3.4

Basic examples (I)

- Covariant derivative:

$$\nabla X = X^{\alpha}{}_{;\beta} \frac{\partial}{\partial x^{\alpha}} \otimes \mathrm{d}x^{\beta} = \left(X^{\alpha}{}_{,\beta} + \Gamma^{\alpha}_{\beta\gamma} X^{\gamma} \right) \frac{\partial}{\partial x^{\alpha}} \otimes \mathrm{d}x^{\beta}$$

- Einstein's field equations:

$$G_{\mu\nu} \equiv R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu}$$

- Schwarzschild metric:

$$c^2\,\mathrm{d}\tau^2 = \left(1 - \frac{r_\mathrm{s}}{r}\right) c^2\,\mathrm{d}t^2 - \left(1 - \frac{r_\mathrm{s}}{r}\right)^{-1} \mathrm{d}r^2 - r^2 \underbrace{\left(\mathrm{d}\theta^2 + \sin^2\theta\,\mathrm{d}\varphi^2\right)}_{\mathrm{d}\Omega^2}$$

- Einstein–Hilbert action:

$$S = \frac{1}{2\kappa} \int R \sqrt{-g}\,\mathrm{d}^4 x$$

Basic examples (II)

- Case $n = 1$

$$\int_0^{\frac{\pi}{2}} \frac{\sqrt{\frac{1}{2}\sqrt{\frac{\ln^2\cos\theta}{\theta^2+\ln^2\cos\theta}}+\frac{1}{2}}}{\sqrt[4]{\theta^2+\ln^2\cos\theta}}\,d\theta = \frac{\pi}{2\sqrt{\ln 2}}$$

- Generalization:

$$\begin{cases} R_n^- = \dfrac{2}{\pi}\displaystyle\int_0^{\pi/2} \left(\theta^2+\ln^2\cos\theta\right)^{-2^{-n-1}} \sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\cdots+\frac{1}{2}\sqrt{\frac{\ln^2\cos\theta}{\theta^2+\ln^2\cos\theta}}}}\,d\theta = (\ln 2)^{-2^{-n}} \\ R_n^+ = \dfrac{2}{\pi}\displaystyle\int_0^{\pi/2} \left(\theta^2+\ln^2\cos\theta\right)^{2^{-n-1}} \sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\cdots+\frac{1}{2}\sqrt{\frac{\ln^2\cos\theta}{\theta^2+\ln^2\cos\theta}}}}\,d\theta = (\ln 2)^{2^{-n}} \end{cases}$$

Using with CJK fonts

- 【留数定理】全纯函数 f 在若尔当曲线 γ 上的积分为：

$$\oint_\gamma f(z)\,\mathrm{d}z = 2\pi\mathrm{i}\sum_{k=1}^{n} \operatorname{Res}_{z=a_k} f(z).$$

- 【留數定理】全純函數 f 在若爾當曲線 γ 上的積分為：

$$\oint_\gamma f(z)\,\mathrm{d}z = 2\pi\mathrm{i}\sum_{k=1}^{n} \operatorname{Res}_{z=a_k} f(z).$$

- 【留数定理】ジョルダン曲線 γ に沿う正則関数 f の積分は、

$$\oint_\gamma f(z)\,\mathrm{d}z = 2\pi\mathrm{i}\sum_{k=1}^{n} \operatorname{Res}_{z=a_k} f(z).$$

Multiple weights (preview)

$$\frac{\partial}{\partial \alpha} \sin \alpha = \cos \alpha$$

$$\frac{\partial}{\partial \beta} \cos \beta = -\sin \beta$$

$$\frac{\partial}{\partial \gamma} \tan \gamma = \sec^2 \gamma$$

$$\frac{\partial}{\partial \theta} \cot \theta = -\csc^2 \theta$$

$$\frac{\partial}{\partial \phi} \sec \phi = \tan \phi \sec \phi$$

$$\frac{\partial}{\partial \zeta} \csc \zeta = -\cot \zeta \csc \zeta$$

$$\int \sin x \, dx = -\cos x + C_1$$

$$\int \cos y \, dy = \sin y + C_2$$

$$\int \tan z \, dz = -\ln |\cos z| + C_3$$

$$\int \cot p \, dp = \ln |\sin p| + C_4$$

$$\int \sec q \, dq = \ln |\sec q + \tan q| + C_5$$

$$\int \csc r \, dr = -\ln |\csc r + \cot r| + C_6$$