

21 October 2021

$$\pi e^{-a} \rightarrow \frac{\pi}{e}$$

$$\frac{d(\alpha y)}{dx} = \alpha S$$

$$\alpha y = \int^x \alpha(x') S(x') dx'$$

$$y = \frac{1}{\alpha(x)} \int_{x_0}^x \alpha S dx'$$

$$\frac{1}{(x-1)(x+1)}$$

$$a_{j+2} = 0 \quad \text{if} \quad \lambda = j(j+1)$$

$$\frac{W'}{W} = -P(x)$$

$$\log \frac{W(x)}{W(x_0)} = - \int_{x_0}^x P(x') dx'$$

$$W(x) = W(x_0) e^{- \int_{x_0}^x P(x') dx'}$$

$$(v, Lu) = \int (Lv)u dx = (Lv, u)$$

$$(v, Lu) = \underbrace{(L^+ v, u)}_{(Lv, u)}$$

self adjoint

$$u_1(a) = 0$$

$$u_2(a) = 0$$

$$\alpha u_1(a) + \beta u_2(a) = 0$$

$$= \int (Lv) u dx = (Lv, u)$$

$$L = - \frac{d}{dx} \left(p(x) \frac{d}{dx} \right) + q(x)$$

$$q = 0 \quad p = 1$$

$$L = - \frac{d^2}{dx^2}$$

$$Lu = -u'' = \lambda u$$

$$(-\pi, \pi)$$

$$p = 1 - x^2 \quad u = x^m$$

$$\int dx x^2 u^2 = \int dx x^2 x^{2m}$$

$$x^{2m+2}$$

$$\sim \frac{1}{x^\alpha} = x^{-\alpha} \quad \alpha > 1$$

$$2n+2 = -\alpha < -1$$

$$2n < -3$$

$$n < -3/2$$

$$= -e \times p(x) \frac{d^2}{dx^2} - \frac{h_1}{h_2} \exp(x) \frac{d}{dx}$$

$$- \exp(x) \frac{h_0}{h_2}$$

$$\frac{p'(x)}{p(x)} = \frac{d}{dx} \log p(x)$$

$$\begin{aligned} & (\log p(x) - \log p(x_0)) \\ &= \log \left(\frac{p(x)}{p(x_0)} \right) \end{aligned}$$

$$g_2(x) = g_1(x) \int \frac{w(x')}{\dots} dx'$$

$v =$

$$\sum c_j y_j(x)$$

$$= y_1(x) \left[\underline{I}(x) - \underline{I}(c) \right]$$

$$A y'' + B y' + C y = 0$$

$$y'' + \frac{B}{A} y' + \frac{C}{A} y = 0$$

$$s^2 - \frac{i}{2} h'(x) - (in)^2 = s^2 + \frac{h}{2}$$

$$-\frac{i}{2} h' + in' =$$

$$L_i = \epsilon_{i,j,k} x_j \frac{1}{i} \frac{\partial}{\partial x^k}$$

$$|\psi(x)|^2 dx = P(x)$$

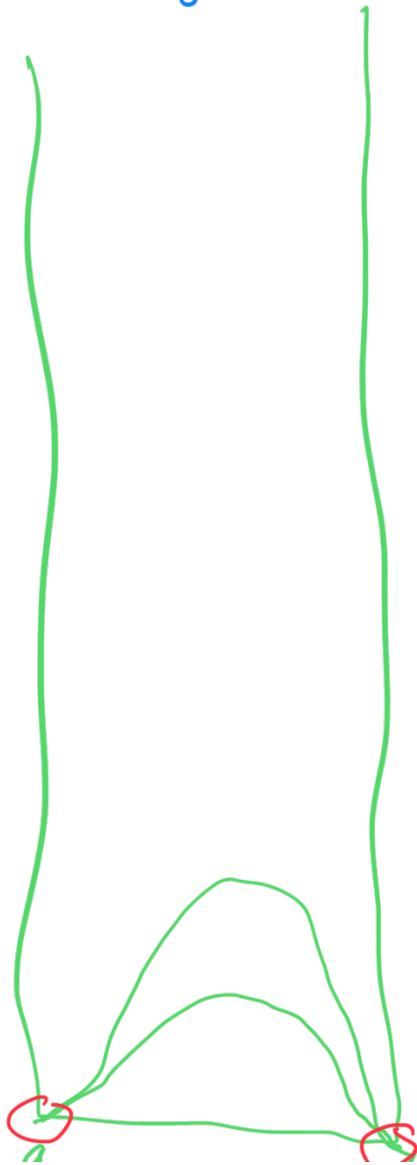
$$1 \approx \int P dx = \int |\psi(x)|^2 dx$$

$$\int_0^{\infty} dr r^2 u(r)^2 < \infty$$

$\left(\rho(r) = r^2 \right)$

$V = \infty$

$V = \infty$



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