Name(s) December 10, 2024

Debug session

$$\cos(\omega t)\hat{x} + \frac{\sin(\omega t)\hat{p}}{\omega} \tag{1}$$

$$-\omega \sin(\omega t)\hat{x} + \cos(\omega t)\hat{p}$$

$$\left(\hat{x}^2,\ \frac{i\frac{d}{dt}\rho(t)}{2\rho(t)}\right)$$

$$\left(\hat{p}\hat{x} + \hat{x}\hat{p},\ -\frac{i\log(\rho(t))}{2}\right)$$

$$-\frac{\omega^2 \sin^2(\omega t)}{2} + \frac{\omega^2 \cos^2(\omega t)}{2} - i\omega \sin(\omega t)\cos(\omega t)$$

$$\frac{\omega^2\hat{x}^2}{2} + \frac{\hat{p}^2}{2} + \frac{\frac{d}{dt}\rho(t)\hat{p}\hat{x}}{2\rho(t)} + \frac{\frac{d}{dt}\rho(t)\hat{x}\hat{p}}{2\rho(t)} + \frac{\frac{d^2}{dt^2}\rho(t)\hat{x}^2}{2\rho(t)}$$

$$-\frac{\log(\rho(t))^9}{362880} + \frac{\log(\rho(t))^8}{40320} - \frac{\log(\rho(t))^7}{5040} + \frac{\log(\rho(t))^6}{720} - \frac{\log(\rho(t))^5}{120} + \frac{\log(\rho(t))^4}{24} - \frac{\log(\rho(t))^3}{6} + \frac{\log(\rho(t))^2}{2} - \log(\rho(t)) + 1$$

$$\frac{\omega^2\rho^2(t)}{2} + \frac{\rho(t)\frac{d^2}{dt^2}\rho(t)}{2} + \frac{\frac{d}{dt}\rho(t)}{\rho(t)} + \frac{1}{2\rho^2(t)}$$

$$\frac{\omega^2\rho^2(t)\hat{x}^2}{2} + \frac{\rho(t)\frac{d^2}{dt^2}\rho(t)\hat{x}^2}{2} - \frac{\frac{d}{dt}\rho(t)\left(\hat{p}\hat{x} + \hat{x}\hat{p}\right)}{2\rho(t)} + \frac{\frac{d}{dt}\rho(t)\hat{p}\hat{x}}{2\rho(t)} + \frac{\frac{d}{dt}\rho(t)\hat{x}\hat{p}}{2\rho(t)} + \frac{\hat{p}^2}{2\rho^2(t)}$$