[nex56] **Mean−square displacement of Brownian particle I.**

Calculate the mean-square displacement $\langle x^2(t)\rangle$ of a Brownian particle via integration from the velocity autocorrelation function:

$$x(t) = \int_0^t ds\, v(s), \qquad \langle v(t_1)v(t_2)\rangle = \frac{k_B T}{m} e^{-(\gamma/m)|t_1-t_2|}.$$