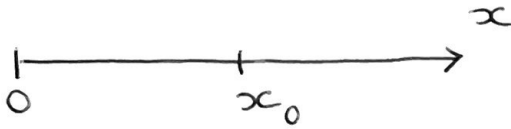


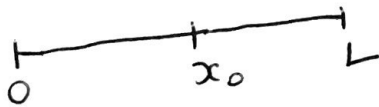
HW # 1

- ①. Consider a 1D semi-infinite interval with absorption at $x=0$:



Find the survival probability $S(t)$ for a particle that starts at $x_0 > 0$ at $t=0$. Sketch $S(t)$ and discuss its asymptotic regimes.

- ②. Consider diffusion on a finite 1D interval:



The particle starts at x_0 at $t=0$.

Use the Laplace transform technique to find (i) $t(x_0)$, the average time to reach \emptyset or L ; (ii) $t_-(x_0)$, the average time to reach 0 ; (iii) $t_+(x_0)$, the average time to reach L .

Hint: use Mathematica to take derivatives and limits!