$\int_{e^{T}} dx = \int_{e^{T}} dx = \int_{e^{T}} dx = 2t dx \cdot 2t dt = \int_{e^{T}} dx = 2t dx \cdot 2t dt = e^{T} + \int_{e^{T}} dt = 2t dx - 2e^{T} + \int_{e^{T}} dt = 2t dx - 2$