

1. (a) $\frac{1}{2}$ (b) $2 \ln x - \ln(x - 1) - \ln(x + 1)$

2. (a) $\ln x$ (b) $-2xe^{-x^2}$

3. (a) $\frac{1}{2}$ (let $u = \ln x$) (b) $e^{-\frac{1}{x}} + C$ (let $u = -\frac{1}{x}$)