1. Compute the indefinite integral

\[ \int f'(x) \, dx \]

2. Compute

\[ \frac{d}{dx} \int_{x^2}^{2} e^{t^2} \, dt \]
3. First express the following improper integral as a limit, then calculate it.

\[
\int_{0}^{4} \frac{1}{\sqrt{x}} \, dx
\]

4. Solve the differential equation \( t \, y' = y^{1/2} \) for \( y(t) \) when \( y(1) = 4 \). You may assume \( t \geq 1 \).
1. Compute the indefinite integral
\[ \int f'(x) \, dx \]

2. Compute
\[ \frac{d}{dx} \int_{2x}^{2} e^{t^2} \, dt \]
3. First express the following improper integral as a limit, then calculate it.

\[ \int_{0}^{1} \frac{1}{\sqrt{x}} \, dx \]

4. Solve the differential equation \( t \, y' = y^{1/2} \) for \( y(t) \) when \( y(1) = 9 \). You may assume \( t \geq 1 \).