

Compute the following integrals using integration by parts.

1.  $\int \frac{\ln x}{x^{3/2}} dx$

2.  $\int \arctan x dx$

3.  $\int \arcsin(x) dx$

4.  $\int e^x \ln(1 + e^x) \sqrt{1 + e^x} dx$

5.  $\int x^2 e^{\frac{x}{2}} dx.$