

Evaluate.

1. $\int \tan^{-1} x \, dx$

2. $\int e^x \cos x \, dx$

3. $\int (x^2 + 1)e^x \, dx$

4. $\int_0^\pi x(\pi - x) \sin nx \, dx$

5. $\int_0^1 x \ln x \, dx$

6. $\int_0^\infty xe^{-x} \, dx$