

Evaluate the following integrals.

$$1. \int x^3 \cos(x^4) dx \quad 2. \int e^x \cos(x) dx$$

$$3. \int x^3 \sin(x^2) dx \quad 4. \int \arctan(x) dx$$

$$5. \int_1^5 x \sqrt{28 - x^2} dx \quad 6. \int \cos(x) \sin(x) e^{\sin(x)} dx$$

$$7. \int \frac{e^x}{1 + e^x} dx \quad 8. \int \frac{e^x}{1 + e^{2x}} dx$$

$$9. \int \tan(x) dx \quad (\text{Hint: Consider that } \tan(x) = \frac{\sin(x)}{\cos(x)})$$

$$10. \int \sin(x)^2 dx \quad (\text{Hint: Think parts})$$

$$11. \int e^x \sin(x) dx$$

$$12. \int_2^3 \frac{x^2 - 1}{x^3 - 3x} dx$$