Evaluate the following integrals.

1. $\displaystyle \int_1^{e^3} \ln(2x) \, dx$

2. $\displaystyle \int \frac{e^x}{1 + e^{2x}} \, dx$

3. $\displaystyle \int \cos(x) \sin(x) e^{\sin(x)} \, dx$

4. $\displaystyle \int x^3 \cos(x^4) \, dx$

5. $\displaystyle \int x^3 \sin(x^2) \, dx$

6. $\displaystyle \int \arctan(x) \, dx$

7. $\displaystyle \int_2^3 \frac{x^2 - 1}{x^3 - 3x} \, dx$

8. $\displaystyle \int_0^{\pi} e^x \sin(e^x) \, dx$

Evaluate the following integrals.

9. $\displaystyle\int_{1}^{5} x\sqrt{28 - x^2}\ dx$

13. $\displaystyle\int_{1}^{4} \frac{\sqrt{x}}{1 + \sqrt{x}}\ dx$

10. $\displaystyle\int \frac{e^x}{1 + e^x}\ dx$

14. $\displaystyle\int \frac{\sec(x)^2}{\sqrt{1 - \tan(x)^2}}\ dx$

11. $\displaystyle\int \frac{e^x}{1 + e^{2x}}\ dx$

15. $\displaystyle\int \sin(x)^2\ dx$

12. $\displaystyle\int \tan(x)\ dx$

16. $\displaystyle\int_{0}^{\pi} e^x \sin(x)\ dx$