1. Compute $\int_1^4 \frac{x-\sqrt{x}}{x+\sqrt{x}}\,dx$

2. Compute $\int \sqrt{1+\sqrt{x}}\,dx$

3. Compute $\int x^2 \ln x\,dx$

4. Compute $\int \frac{\ln x}{x^2}\,dx$

5. Compute $\int x^8 \sqrt{x^3-1}\,dx$

6. Compute $\int_1^4 \frac{\sin\sqrt{x}}{\sqrt{x}}\,dx$

7. Compute $\int_6^8 x\sqrt{100-x^2}\,dx$

8. Compute $\int \tan^{-1} 2x\,dx$

9. f is a continuously differentiable function. Show that

$$\int_a^b f'(x)e^{f(x)}\,dx = e^{f(b)} - e^{f(a)}$$

10. Find the area bounded by the function $f(x) = \frac{\ln x}{x}$ and x-axis over the interval $[1,e]$