

1. Evaluate  $\int 2x \cos(x) dx$ .
2. Evaluate  $\int x^2 \ln x dx$ .
3. Evaluate  $\int_0^{\pi^2} \cos(\sqrt{x}) dx$ .
4. Evaluate  $\int \arctan(4t) dt$ .
5. Evaluate  $\int y^2 \sin(y) dy$ .
6. Evaluate  $\int_{-1}^4 x^2 e^{-x} dx$ .
7. Evaluate  $\int x^2 \arcsin(x) dx$ .
8. Evaluate  $\int \cos(2x) \sin(5x) dx$ .
9. Evaluate  $\int_{\pi}^{5\pi/2} \cos(2x) e^{3x} dx$ .
10. Evaluate  $\int (\sin(x))^2 dx$ .
11. If  $f$  and  $g$  are twice differentiable,  $f(0) = g(0) = 0$ , and  $f''$  and  $g''$  are continuous, what can you say about  $\int_0^a f(x)g''(x) dx$ ?
12. Evaluate  $\int (\ln(x))^2 dx$ .
13. Prove that  $\int (\ln(x))^n dx = x(\ln(x))^n - n \int (\ln(x))^{n-1} dx$ .