

Section 5.5

8. Substitute $u = x^3$. Final answer: $\frac{1}{3}e^{(x^3)} + C$.

20. Substitute $u = z^3 + 1$. Final answer: $\frac{1}{3} \ln |z^3 + 1| + C$.

42. Substitute $u = \ln t$. Final answer: $\sin(\ln t) + C$.

58. Substitute $u = \frac{1}{2}t$. Final answer: $\frac{4}{3}\sqrt{3}$.

68. Substitute $u = 1 + 2x$. Final answer: $\frac{10}{3}$.

Section 7.1

6. Integration by parts with $u = x - 1$. Final answer:

$$-\frac{1}{\pi}(x-1)\cos(\pi x) + \frac{1}{\pi^2}\sin(\pi x) + C.$$

10. Integration by parts with $u = \ln(\sqrt{x})$. Final answer:

$$x \ln(\sqrt{x}) - \frac{1}{2}x + C.$$

28. Integration by parts with $u = t^2$. Final answer: $-2\pi^2$.

30. Integration by parts with $u = \tan^{-1}\left(\frac{1}{x}\right)$. Final answer: $\frac{\pi\sqrt{3}}{6} - \frac{\pi}{4} + \frac{1}{2}\ln 2$.

58. Subtract $\int_0^1 xe^{-x} dx - \int_0^1 x^2e^{-x} dx$. Final answer: $\frac{3}{e} - 1$.