

For each problem, do you think you should do a  $u$ -substitution or integration by parts? Whichever choice you make, examine the new antiderivative problem and ask yourself “Is this new antiderivative not worse than the one I started?” Then ask yourself what you think you’d do to tackle the new antiderivative problem.

(1)  $\int x^2 \ln(x) dx$

(6)  $\int \arctan(x) dx$

(2)  $\int \frac{t+2}{\sqrt{t^2+4t}} dt$

(7)  $\int e^{\sec(t)} \frac{\sin(t)}{\cos^2(t)} dt$

(3)  $\int x \sin(x) dx$

(8)  $\int \sin(x)e^x dx$

(4)  $\int x^{-2} e^{\frac{1}{x}} dx$

(9)  $\int \ln(\sqrt[3]{t}) dt$

(5)  $\int \frac{\sin(\theta)}{1+\cos^2(\theta)} d\theta$

(10)  $\int \frac{\sqrt{1+\ln(x)}}{x} dx$