

**Calculus Practice: Techniques for Finding Antiderivatives 18b****Evaluate each indefinite integral.**

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

2)  $\int \log_2 x \, dx$

3)  $\int \frac{\ln x}{x^2} \, dx$

4)  $\int xe^x \, dx$

$$5) \int x e^{-x} dx$$

$$6) \int x \cos x dx$$

$$7) \int x \sin x dx$$

$$8) \int \ln x dx$$

$$9) \int x \cdot 2^{-x} dx$$

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

## Calculus Practice: Techniques for Finding Antiderivatives 18b

Evaluate each indefinite integral.

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

Use:  $u = \ln x$ ,  $dv = x^2 \, dx$

$$\int x^2 \ln x \, dx = \frac{x^3 \ln x}{3} - \frac{x^3}{9} + C$$

2)  $\int \log_2 x \, dx$

Use:  $u = \log_2 x$ ,  $dv = dx$

$$\int \log_2 x \, dx = x \log_2 x - \frac{x}{\ln 2} + C$$

3)  $\int \frac{\ln x}{x^2} \, dx$

Use:  $u = \ln x$ ,  $dv = \frac{1}{x^2} \, dx$

$$\int \frac{\ln x}{x^2} \, dx = \frac{-\ln x - 1}{x} + C$$

4)  $\int xe^x \, dx$

Use:  $u = x$ ,  $dv = e^x \, dx$

$$\int xe^x \, dx = xe^x - e^x + C$$

$$5) \int x e^{-x} dx$$

Use:  $u = x, dv = e^{-x} dx$

$$\int x e^{-x} dx = \frac{-x - 1}{e^x} + C$$

$$6) \int x \cos x dx$$

Use:  $u = x, dv = \cos x dx$

$$\int x \cos x dx = x \sin x + \cos x + C$$

$$7) \int x \sin x dx$$

Use:  $u = x, dv = \sin x dx$

$$\int x \sin x dx = -x \cos x + \sin x + C$$

$$8) \int \ln x dx$$

Use:  $u = \ln x, dv = dx$

$$\int \ln x dx = x \ln x - x + C$$

$$9) \int x \cdot 2^{-x} dx$$

Use:  $u = x, dv = 2^{-x} dx$

$$\int x \cdot 2^{-x} dx = -\frac{x}{2^x \ln 2} - \frac{1}{2^x \cdot (\ln 2)^2} + C$$

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

Use:  $u = \ln x, dv = \frac{1}{\sqrt{x}} dx$

$$\int \frac{\ln x}{\sqrt{x}} dx = 2x^{\frac{1}{2}} \ln x - 4x^{\frac{1}{2}} + C$$