

## Assignment 6-5

Evaluate each integral in Problems 1-17 without using a calculator.

1.  $\int_1^e \frac{2}{x} dx$

2.  $\int_1^3 \frac{4}{2t-1} dt$

3.  $\int_{-1}^1 4^{x+1} dx$

4.  $\int_0^2 e^{-2x} dx$

5.  $\int e^{x^2-1} x dx$

6.  $\int \frac{x}{x^2-1} dx$

7.  $\int \frac{x^2-1}{x} dx$

8.  $\int \frac{4y-6}{y^2-3y+2} dy$

9.  $\int \frac{x+1}{x-1} dx$

10.  $\int \frac{-1}{(x+1)^3} dx$

11.  $\int \frac{3u}{\sqrt[3]{u^2+1}} du$

12.  $\int \frac{\sqrt{\ln x}}{x} dx$

13.  $\int \frac{2}{x(1+\ln x)^5} dx$

14.  $\int \frac{\cos y}{\sin y-2} dy$

15.  $\int \frac{\cot^2 x - 1}{\cot x} dx$

16.  $\int \tan^2(3x) dx$

17.  $\int \frac{4}{2+\sqrt{x}} dx$

Differentiate in Problems 18-23.

18.  $f(x) = \ln(x-1)^{\frac{2}{3}}$

19.  $y = \frac{t^2}{\ln t}$

20.  $g(y) = \ln|(1-\ln y)|$

21.  $y = x^{2x+1}$

For Problems 22-35, evaluate each integral.

22.  $\int e^{5x} dx$

23.  $\int \frac{e^{u^2}}{u^2} du$

24.  $\int \frac{e^{\sqrt{y}}}{\sqrt{y}} dy$

25.  $\int \frac{e^{\tan x}}{\cos^2 x} dx$

26.  $\int (2x-1)(10^{x^2-x}) dx$

27.  $\int (e^{-3y}-2)^5 e^{-3y} dy$

28.  $\int \frac{e^{-x}}{\sqrt{2-e^{-x}}} dx$

29.  $\int e^{bx^2-a} x dx$   
where  $a$  and  $b$  are constants

30.  $\int \frac{e^x - e^{-x}}{(e^x + e^{-x})^3} dx$

31.  $\int \frac{xe^{2x} - e^x}{e^{2x}} dx$

32.  $\int_{-1}^1 e^{1-2x} dx$

33.  $\int_0^2 (e^{\frac{x}{2}} - x) dx$

34.  $\int_0^4 2^{3t} dt$

35.  $\int_0^{\frac{1}{2}} e^{\sin(\pi\theta)} \cos(\pi\theta) d\theta$