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Worksheet 13  
[Integration]

Determine each of the following integrals:

1.  $\int \frac{1}{1 + \sin x} dx$

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

3.  $\int \frac{1}{1 + \cos x} dx$

4.  $\int \frac{1}{1 - \cos x} dx$

5.  $\int \frac{\sec^2 x + \sec x \tan x}{\sec x + \tan x} dx$

6.  $\int \sec x dx$

7.  $\int \frac{1}{x \ln x} dx$

8.  $\int \frac{1}{\sqrt{x}(1 + \sqrt{x})^2} dx$

9.  $\int \theta (1 - 3\theta^2)^{\frac{1}{4}} d\theta$

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

11.  $\int x \cos(3x^2) dx$

12.  $\int e^{3x} dx$

13.  $\int x^3 e^{x^4} dx$

14.  $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$

15.  $\int \frac{x^3}{(4 - x^4)^3} dx$

16.  $\int \frac{\sin \sqrt{\theta}}{\sqrt{\theta} \cos^3 \sqrt{\theta}} d\theta$

17.  $\int \sec^2 x \tan^2 x dx$

18.  $\int \cot^7 x \csc^2 x dx$

19.  $\int \frac{\cos x}{1 - \sin x} dx$

20.  $\int \frac{e^x}{1 + e^x} dx$

21.  $\int \frac{e^x + e^{-x}}{e^x - e^{-x}} dx$

22.  $\int \sec^2 x \tan x dx$

23.  $\int \sin x \cos x dx$

24.  $\int \sqrt{3 - 4x} dx$

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25.  $\int \frac{y^2 + 4y - 4}{\sqrt{y^3 + 6y^2 - 12y + 9}} dy$

26.  $\int \frac{2 + \ln x}{x + x \ln x} dx$

27.  $\int \sin^2 x dx$

28.  $\int \cos^2 x dx$

29.  $\int \sin^3 x \cos^2 x dx$

30.  $\int \cos^3 x dx$

31.  $\int \frac{2x^3 + 3x^2 - 4x}{x^4 + 2x^3 - 4x^2 + 5} dx$

32.  $\int \frac{\left(1 + t^{\frac{2}{3}}\right)^3}{t^{\frac{1}{3}}} dt$

33.  $\int \tan^3 x \sec^3 x dx$

34.  $\int \cos(2x) e^{(\sin 2x)} dx$

35.  $\int (x - 1) \sqrt{x + 1} dx$

36.  $\int x \sqrt{2 - 3x} dx$

37.  $\int (\sec^4 x - \sec^2 x \tan^2 x) dx$

38.  $\int e^{\cot 3x} \csc^2 3x dx$

39.  $\int \frac{e^{\ln x}}{x} dx$

40.  $\int \cot^2 x dx$

41.  $\int \tan^2 x dx$

42.  $\int \tan x dx$

43.  $\int \cot 4x dx$

44.  $\int (\sec^2 x - \tan^2 x) dx$

45.  $\int (\csc^2 x - \cot^2 x) dx$

46.  $\int \frac{x}{\sqrt{x^2 + 1}} dx$

47.  $\int x^3 \sqrt{1 - x^2} dx$

48.  $\int \sqrt{x} \sin\left(1 + x^{\frac{3}{2}}\right) dx$

49.  $\int \frac{ax + b}{\sqrt{ax^2 + 2bx + c}} dx$

50.  $\int \frac{\sec\theta \tan\theta}{1 + \sec\theta} dx$