

Section 7.4

Trigonometric Substitution and Partial Fractions.

1. $\int \frac{5}{y^2 + 5} dy$

2. $\int \frac{y^2}{y^2 + 5} dy$

3. $\int \frac{dx}{x^2 - 6x + 13}$

4. $\int \frac{dx}{\sqrt{x^2 - 6x + 13}}$

4. Use method of partial fractions to find:

$$\int \frac{3u + 1}{u^2 - 3u + 2} du$$

5. Find the following integrals using proper trigonometric substitution.

a. $\int \frac{1}{y^2 - 4} dy$

b. $\int \frac{dx}{\sqrt{9 + x^2}}$

c. $\int \frac{y^2}{\sqrt{4 - y^2}} dy$

d. Use substitution $x = 4 \sec \theta$ to evaluate $\int \frac{dx}{\sqrt{x^2 - 16}}$.

8. Evaluate the integrals:

A. $\int_1^2 \frac{6dx}{\sqrt{4-(x-1)^2}}$

B. $\int_0^1 \frac{1-x}{\sqrt{8+2x-x^2}} dx$

C. $\int \frac{du}{4u^2+4u+2}$

D. $\int \frac{(x-3)^3}{x^2-9} dx$

E. $\int \frac{5w-3}{w^2-2w-3} dw$

F. $\int \frac{4x+3}{x^2+4x+4} dx$

Match the following integrals in column I with the corresponding equivalent integral in Column II.

A. $\int \frac{1}{25+x^2} dx$

B. $\int \frac{x}{25-x^2} dx$

C. $\int \sqrt{25+x^2} dx$

D. $\int \frac{\sec^2 5x}{1+\tan 5x} dx$

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

F. $\int \frac{(\ln x)^3}{x} dx$

1. $\int \frac{w}{1+w} dw$

2. $\frac{1}{5} \int \frac{1}{1+w} dw$

3. $\int w^3 dw$

4. $\int \frac{5}{1+w} dw$

5. $\int \frac{5}{\cos^3 \theta} d\theta$

6. $-\int \frac{1}{\tan \theta} d\theta$

7. $\int \cot \theta d\theta$

8. $\frac{1}{5} \int d\theta$