

Section 5.7 Problems

1. State the trigonometric substitution appropriate to the given integral:

$$(a) \int \sqrt{9-x^2} dx \quad (b) \int x^2(x^2+16)^{1.5} dx \quad (c) \int x^2(x^2-5)^{-2} dx$$

2. Evaluate the following integrals:

$$(a) \int \sin^5(x) dx$$

$$(g) \int \frac{\sin^7(x)}{\cos^4(x)} dx$$

$$(b) \int \sin^2(x) \cos^6(x) dx$$

$$(h) \int \sqrt{16-5x^2} dx$$

$$(c) \int \sin^3(x) \cos^2(x) dx$$

$$(i) \int \frac{1}{x\sqrt{x^2-9}} dx$$

$$(d) \int \tan^2(x) \sec^4(x) dx$$

$$(j) \int_0^1 \frac{1}{(4+9x^2)^2} dx$$

$$(e) \int \tan^3(x) \sec(x) dx$$

$$(k) \int \sqrt{x^2-4x+7} dx$$

$$(f) \int \cos^3(2-x) \sin(2-x) dx$$

$$(l) \int \frac{1}{\sqrt{x+6x^2}} dx$$

3. Which integral requires more work to evaluate?

$$\int \sin^{798}(x) \cos(x) dx \quad \text{or} \quad \int \sin^4(x) \cos^4(x) dx$$

4. Which integral requires more work to evaluate?

$$\int \frac{x}{\sqrt{x^2-4}} dx \quad \text{or} \quad \int \frac{x^2}{x^2-4} dx$$