

MA 182 Additional Integrals Involving Powers of Trigonometric Functions
Section 5.7

1. Evaluate each integral. Use additional paper to do these problems.

(a) $\int \sin^3 2x \, dx$

(b) $\int \cos^2 5x \, dx$

(c) $\int \tan^6 x \sec^4 x \, dx$

(d) $\int \tan^3 x \sec^3 x \, dx$

2. Evaluate the definite integral using the Fundamental Theorem of Calculus.

$$\int_0^1 \cos^4 2x \sin 2x \, dx$$

3. The velocity (at time t) of a point moving on a coordinate line is $v(t) = \cos^2(\pi t) \, dt \, \text{ft/sec}$. How far does the point travel from $t = 0$ to $t = 5$?

Answers

1. (a) $-\frac{1}{2} \cos 2x + \frac{1}{6} \cos^3 2x + C$ (b) $\frac{1}{2} x + \frac{1}{20} \sin 10x + C$
(c) $\frac{\tan^9 x}{9} + \frac{\tan^7 x}{7} + C$ (d) $\frac{\sec^5 x}{5} - \frac{\sec^3 x}{3} + C$

2. 0.10125

3. 2.5 ft