

1. Evaluate each of the following integrals. (Continued on the next page.)

(a) $\int_0^{\frac{\pi}{3}} \cos^3(x) dx$

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

(b) $\int \frac{x}{x^2-16} dx$

(e) $\int_{-\frac{\pi}{2}}^{-\frac{\pi}{4}} \cot^4(x) \csc^6(x) dx$

(c) $\int \frac{1}{x^2-16} dx$

(f) $\int \cos(4x) \sin(9x) dx$

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

$$(j) \int \frac{4}{(4-x^2)^2} dx$$

$$(h) \int \sin^7(x) \cos^5(x) dx$$

$$(k) \int \frac{4x}{(4-x^2)^2} dx$$

$$(i) \int \frac{x^3}{(1+x^2)^2} dx$$

$$(l) \int \frac{5}{x^3 \sqrt{x^2+4}} dx$$

2. Do problem #54 in Section 8.3. (Page 453)

3. Find the centroid of the region in the first quadrant that is bounded by the graphs of $y = \frac{x}{\sqrt{25 - x^2}}$, $x = 0$, and $x = 4$.