

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

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

$$(d) \int \frac{\cos(x)}{2 - \sin(x)} dx$$

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

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

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

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

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

(j) $\int \sqrt{1+x^2} dx$

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

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

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

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

2. Do #32 in section 9.2 (page 467).

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 $x = 4$.